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ADDRESSES AND ORIGINAL ARTICLES

THE PSYCHOLOGY OF PERSONAL INFLUENCE *

By William Brown, M.D., D.Sc., F.R.C.P.

WILDE READER IN MENTAL PHILOSOPHY IN THE UNIVERSITY OF OXFORD; HON. CONSULTING PSYCHOLOGIST AND HON. DIRECTOR OF THE PSYCHOLOGICAL LABORATORY, BETHLEM ROYAL HOSPITAL

A CONSIDERATION of the psychology of personal influence brings forward a problem of the utmost importance in the present stage of world history. With the increase of population, a more widespread education, and a more rapid dissemination of news and opinion, there is an increasing tendency towards group, crowd, or community activities. There is also—what is more significant—a tendency towards community thinking, of which I need hardly give examples. The possibility even presents itself that with these developments the art of individual or independent thinking may be lost. It is thought alone, so far as I can see, which enables us to insulate ourselves adequately; but there are signs on every hand of non-insulated or group thinking. People group together to do their thinking, putting themselves for this purpose under a master, whom they over-valuate, as he himself, in many cases, would be the first to admit.

The exercise of personal influence is only possible where there is an ability to respond to such influence. With a feeble-minded person, in whom there is no capacity for response, one is helpless. Adequate material is needed upon which the influence can be projected. As someone has put it, for successful propaganda it is necessary to have the "proper geese"! Nowadays there is a strong tendency towards selection in this respect. People quickly classify themselves, decide under what banner they will march, and look for a leader, whom they find, of course, inevitably sooner or later.

We find the reason for this immediately on a study of the history of the human race and its mental development. We have developed as groups—members of the family, to start with, going on to the clan, the tribe, the nation. We have had to carry on our struggle for existence, not only individually, but still more definitely as members of groups or societies of various kinds, so that the group or community spirit, or what has been called, inadequately, the herd instinct, is engrained in us. No one is free from it. It is not an indefinable and unanalysable thing. It has, indeed, been analysed by several psychologists, notably by Prof. William McDougall, also by Freud in his "Group Psychology and the Analysis of the Ego." What is still more interesting, we have the opinion of these two psychologists upon each other's position, for Freud has referred to McDougall in the work just mentioned, and McDougall has given a detailed criticism of Freud in one of the essays in the collective work, "Problems of Personality," the book published in honour of Dr. Morton Prince.

AUTO-SUGGESTION AS A REGRESSIVE PROCESS

In a former address[1] I showed how hypnotism could produce a reorientation of subconscious psychical forces, with a corresponding enhancement of will-power and transformation of character. A factor of central importance in the theory and practice of hypnotism is *rapport*, or the personal relationship between the hypnotist and the person hypnotized, and this it is necessary to consider in some detail. In order to produce an effect, an idea must be in relation with some source of mental energy. According to Freud's theory, the affective tendency concerned is of a sexual nature—not the tendency of ordinary sexual love, but a sexual tendency inhibited in its aim (*zielgehemmte*), manifested in a readiness to rely completely upon the hypnotist—in other words, the well-known factor of "transference."

At first sight all suggestion seems to be in essence auto-suggestion, because the patient is required to make the suggestion his own. But there is also the possibility that all suggestion may be hetero-suggestion—that the individual may never be able to accept anything from himself, but must always accept it from without, from people, from books, from events in the outer world, so that ultimately even auto-suggestion would be based on hetero-suggestion. Freud's leading follower in this country, Dr. Ernest Jones, in an article on the Nature of Auto-suggestion,[2] maintains with Freud that the success of hetero-suggestion is due to the re-arousal of early feelings towards the father, in which the hypnotist is put in place of the ego-ideal or super-ego. Those whom I am addressing will be familiar with Freud's theory of the narcissistic or identification type of love of a little boy towards his father, and the dependence or "anaclitic" type of love towards his mother, and the hostility, repression, and conflict which ensue. The conflict is between the child's ego and his ego-ideal, the latter corresponding with his conception of his father; later on this distinction, still within the domain of the unconscious, becomes that between the libido, or what Freud now calls *das Es*, and the super-ego. When a person is hypnotized he puts the hypnotist in the place of his ego-ideal. In auto-suggestion, still according to Ernest Jones, there is a regression, a stepping back to a still earlier psychological situation, a situation of primary narcissism, the fixation of the libido or sex emotional energy upon the self, not sexual in the adult sense, of course, but relating to those earliest years, when the sexual instincts have no independent means of finding satisfaction, but prop themselves up, as Freud says, against the self-preservative instincts. In the practice of auto-suggestion, according to Jones, the individual returns to this earliest stage, concentrating upon the idea of himself.

AUTO-SUGGESTION AS A PROCESS OF MENTAL DEVELOPMENT

As I have pointed out in a previous paper,[3] the narcissistic fixation on self which this theory supposes would be a pronounced form of regression, and therefore pathological or degenerative. It would mean an impoverishment of the ego by the withdrawal of energy otherwise available to the individual for getting into touch with the world around him. If this further development of Freudian doctrine is correct it is not easy to understand the beneficial effects of auto-suggestion in the improvement of physical health, nor the fact that the more normal and healthy a person is, and the greater his powers of concentration, the more effective is the practice of

* An address delivered to the section of psychology of the British Association on Sept. 8th.

[1] THE LANCET, 1932, ii., 1039.

[1] Brit. Jour. Med. Psychol., 1923, iii., 209.

[2] Brit. Med. Jour., 1928, i., 53 and 251.

auto-suggestion in his case. It seems evident that, in face of the therapeutic results, some other way of explaining auto-suggestion must be found. It is well to point out that, as denoting a form of psychotherapy, the term "auto-suggestion" is inadequate and misleading. Taken literally, it usefully indicates the pathological effects of bad auto-suggestion, but it does not satisfactorily indicate the nature of therapeutic suggestion as a correction and improvement of function. Any regression to narcissism must also mean a stepping back from a state of health to some form of illness. It may be urged that any improvement through auto-suggestion is apparent rather than real, and that actually there is impoverishment of the mind and psychological injury. But it is not the experience of those of us who practise therapeutic auto-suggestion that our patients tend to become more self-centred; rather do they become more self-confident, less prone to fear of disease. As I have argued elsewhere,[4] auto-suggestion in its literal form is only a stage of a process of mental development towards an adequate form of volition. So far from being distinct from or a rival to volition, it is a contributory factor towards making volition complete. It restores to the individual a faith in himself, something quite different from narcissistic fixation and from the libido of the sex instinct. The instinct of self-assertion has its own form of energy, forming as sharp a contrast to the libido as the spirited principle to the appetitive principle in Plato's "Republic."

THE LEADER AND THE LED

I turn now to Prof. McDougall's explanation of hetero-suggestion in terms of the instinct of submission, or of self-abasement, whereby the patient surrenders his own view and accepts that of another. McDougall holds that in the presence of the hypnotist the instinct of self-assertion is in abeyance.

As a theory of suggestion this seems to me to be too limited. The operation of *any* instinct, powerful, profound, and independent of other instincts, will increase suggestibility and produce suggestion effects. If the self-assertive instinct of an individual be aroused (in a state of relative dissociation) he will be made more suggestible in certain directions. The leader who is going to move a nation must have a strong self-assertive instinct, and be completely free from fear. If we look into the history of the world we find that those leaders who have had the most absolute power over their followers have been those who have never shown the slightest flicker of fear. If, later on, they have shown fear they have lost their prestige. Napoleon lost his power over his public when he showed fear, or at least gave evidence of a sinking heart, before Moscow, though some students of Napoleon say that he was falling even earlier than that, through the undermining processes in his own mind. To take a more modern instance, one felt that a certain dictator was destined to succeed when he had to face direct danger, and did not shrink or deviate in his activities when the assassin's bullet grazed his cheek. Julius Cæsar had power over his legions when they mutinied in Spain because, at the psychological moment, he appeared before them unarmed and made them a harangue. In all these cases the suggestion factor has nothing to do with the spirit of submission, rather has it to do with self-assertion. The true leader wants followers self-assertive like himself; he leads them, not by inspiring in them a feeling of fear or merely blind submission, but a feeling of confidence in himself and in his resources. I am referring, of course, to groups enlisted for dangerous enterprises; sheep are not dangerous!

I do not deny the importance of the instinct of self-abasement or of subjection in relation to suggestion effects; nor do I mix up suggestibility with suggestion. The title of my address, "The Psychology of Personal Influence," covers both suggestibility and suggestion. Suggestibility can be produced in many ways, not merely by inducing submission. When patients were hypnotized as a method of treatment of certain war injuries the hypnotist did not take up an attitude of superiority. All that was necessary was to arouse confidence in their minds, a very different thing from the instinct of submission. A timid, panic-stricken crowd is no good to anybody, but a good leader can make of a crowd a very powerful army, a race, a nation, which will alter the history of the world. It is of no use brushing that aside as regression or self-abasement. There is no self-abasement in a people who themselves are anxious to achieve a certain end. They follow their leader because they respect him, believe in him, and hope through him to achieve; not because they fear him. He enables them to believe in themselves. Moreover, a leader very soon finds that he has to follow his followers. The followers project upon the leader their conception of what a leader ought to be, and he has to be that, or be superseded. Is that like the working of the instinct of submission? Yet it is suggestibility. Individuals are more suggestible in groups because there their more primitive instincts are given a chance of greater play. Prof. McDougall himself elsewhere has explained why this happens, through the sympathetic induction of emotion or emotional contagion, because "each of the major instincts is so organised on its perceptual side that the expressions of the same instinct in other individuals are effective provocatives of the instinct in the perceiving individual."

FACTORS GOVERNING THE RESPONSE TO SUGGESTION

I have said that the operation of any instinct will increase suggestibility. A panic-stricken person will respond vigorously to a suggestion of peril; an angry person to a suggestion that he is being insulted; a paranoiac may quickly be led to interpret any remarks or actions as slights upon himself; a jealous person may lend a willing ear to suggestions whereby his jealousy is inflamed to ungovernable fury. Othello, under the influence of jealousy, responds to the suggestions of Iago, so that the latter did what he liked with the Moor—(see especially Act III, scene 3)—and there is no question of any help from transference or any self-abasement in that example. The only instinct working in Othello was a desire to continue to believe in the faithfulness of his wife and to maintain his ideal of her. Iago undermined that, and with it went Othello's confidence in himself, so that Iago made him more and more suggestible and open to his innuendoes.

Not only individual instincts, but also individual sentiments, functioning in relative dissociation from the rest of the mind, may be responsible for pronounced suggestion effects. It is quite unnecessary to argue, as Freud does, that the affective tendency is ultimately always of a sexual nature. We can accept transference as a factor; but if a suggestion effect is a response independently of reason (though not necessarily contrary to reason) it may occur through the activity of instinctive forces other than that of the libido. In every case there is relative dissociation, which means a tendency to regression, a stepping

[4] Science and Personality, Oxford, 1929.

back to more primitive reactions. The leader of a crowd or group obtains his influence in that way.

Prof. McDougall has defined suggestion as the acceptance of a statement or of an idea independently of logically adequate grounds for such acceptance. According to this definition, whenever we consciously act according to reason we are acting independently of suggestion, whereas when we act independently of—though not necessarily contrary to—reason, we are acting according to suggestion. The desire to do "what is right and reasonable as such"—in Henry Sidgwick's phrase—is a definite factor in our lives, but apart from such action according to reason, all action, by McDougall's definition, is under the influence of suggestion. This seems to fail to take account of the strong and suggestible emotional tendency towards "what is right and reasonable as such," which is really one of the great outstanding forces of the mind, protecting it from the contamination of the group mind, enabling the individual to keep his soul, not giving it away or sharing it with others.

Neither the sexual factor postulated by Freud nor the instinct of self-abasement upon which McDougall relies seems to complete the explanation. One of the affective tendencies, of special importance in this connexion, is the gregarious instinct, the "urge" to act in harmony with one's fellows. Freud interprets the action of this instinct again in terms of the libido, holding that the gregarious instinct in itself explains nothing, that in the group strong libidinal relationships spring up between the members towards one another, and between all of them and their leader, so that in the group the individual is bound in two directions, to his fellows and to the leader. Freud propounds a far-fetched theory to explain how this situation arose in prehistoric times, but no real evidence is supplied for it; it is all innuendo and analogy.

SYMPATHY AND FAITH

I maintain that I have an adequate theory of suggestion, distinct from Freud's and from McDougall's. Whereas Freud is content with the libido in its widest sense to explain suggestion, and McDougall emphasises the instinct of self-submission, I hold that a wider basis is needed. It is true that a glass of alcohol, various drugs, emotional intoxication of different kinds, and perhaps the mere fact of being in a group will make an individual more suggestible. But the suggestion, when it is made and the patient responds to it, is not necessarily due to any operation of the instinct of self-abasement. I have given suggestion treatment to many thousands of cases, and their recovery or improvement so far as it has taken place has not been due to the submissiveness of the patients to me. There are plenty of patients who come and long to be hypnotized, but no hypnosis follows, and there are others who are quite sure that they cannot be hypnotized, but are found to be very suggestible and hypnotizable. When one analyses it out, it seems to depend upon a congruence of the unconscious of the hypnotist and that of the hypnotized—deep calling unto deep. That is how a certain leader of the present day is proving himself a real leader (whatever one may think of his activities on political grounds). His own unconscious is absolutely identical with that of his people; he will have no admixture of foreign elements. It is not submission; his people are not of a submissive race, but they will follow such a leader because he evokes their faith and confidence. The same influence may be seen at work at a meeting or great demonstration when a speaker touches some chord, says something with which all agree. One sees all their heads moving forward, like a field of corn under the influence of the wind. It is not because they are submissive; it is because there is agreement in the realm of the unconscious, between the hypnotist, if one likes, and the hypnotized. And it is something like this that the patient expects in therapeutic suggestion.

The possibility is not excluded, of course, that in hypnosis archaic affective tendencies and beliefs may come to the surface and make themselves felt. But therapeutic auto-suggestion goes much further because it replaces the feeling of doubt and fear by a feeling of confidence. The result suggested can then occur, so far as it does not conflict with any of the fundamental laws of nature, and can occur to a maximum degree. The instinct of self-assertion (supported by its own distinctive form of energy, not by libido) may play a prominent part in bringing about a realisation or actualisation of the suggestion. I emphasise this instinct of self-assertion, because it is not referred to in the literature of the subject as of importance in suggestion effects, whereas, in my view, it is of the utmost importance. We have only to look at history at the present time to realise it.

But so far as treatment goes we have also to bear in mind the value of faith—faith, which is a will to trust the noblest hypothesis. By an act of faith, by a venture in that direction, the integrated personality, with all its reserves of instinctive energy, may be made to fulfil more adequately the purposes towards which auto-suggestion is half-blindly pointing. The act or attitude of faith means a movement towards wholeness, not only of the mind in its narrower sense, but of the mind in its relationship to the totality of the universe, in which the individual believes, and which he believes to be ultimately spiritual and friendly. That complete fulfilment, which depends upon faith, may be led up to by suggestion treatment of different kinds, but it goes, of course, beyond suggestion treatment.

PSYCHOLOGY AND PUBLIC AFFAIRS

So often nowadays in the affairs of nations and publics one hears a reference to the influence of the group or even to the hypnotization of groups, that there is a very real danger of being too ready to accept that as an explanation of suggestion. We may agree with Prof. McDougall when he says that the crowd, in becoming organised and differentiated, becomes less and less at the mercy of mass suggestion or the play of primitive instincts, and more and more capable of following a high ideal and of working as an organised group. The individual in that way may find that through the group he rises above himself instead of falling below his level. But we have to pull ourselves up with the recollection that psychology as a science has to deal with facts, not with social values or with philosophical or ethical concepts. The present task of psychology is to increase our knowledge of the facts and to reach an adequate hypothesis for the explanation of the working of those facts. It has no right, qua psychology, to pass beyond that province, and to lay down rules as to the working of the mind, or the manner in which masses should be organised, or the ideals which should be followed by the individual and by the race.

COUNTY LOUTH NEW MENTAL HOSPITAL.—This institution was recently opened by Mr. S. T. O'Kelly, Free State Minister for Local Government and Public Health. There is a central administration block 230 ft. long, with a tower 60 ft. high, a gilded cross surmounting its copper roof. Two wings, 420 ft. long, house the male and female patients respectively.

THE ADRENAL CORTEX AND SEX

THE INFLUENCE OF CORTICAL EXTRACT ON NORMAL AND CASTRATED RATS

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THERE is a considerable amount of clinical evidence of a close relationship between the adrenal glands, the sexual organs, and the secondary sexual characteristics. Most impressive are the numerous records of tumours of the adrenal cortex.

Changes associated with cortical tumours are usually those of masculinisation, but feminisation does occur. In young boys premature puberty (homosexual precocity) has been noted, with enlargement of the testis and penis and the growth of hair (Bulloch and Sequeira, 1905; Cecil, 1933). Actual spermatogenesis or potency is, however, lacking (Meyer and Frumess, 1931; Glynn, 1921). In young girls homosexual precocity has been observed (van den Bergh, 1932). More commonly heterosexual precocity occurs in girls, and Hoag (1923) reports enlargement of the clitoris, growth of hair, and development of a deep voice in a girl aged 4 years. In Bulloch and Sequeira's case (1905) there was a mixture of homosexual and heterosexual changes. The patient, a girl of 11, had menstruated since the age of 10, had breasts like those of a mature woman, with some enlargement of the clitoris and uterus, and yet grew hair on the chin and lips as well as pubis and axillæ. Mathias (1922) described a girl of 3 years of age, sexually mature, and with a beard.

In female adults, cortical tumours are associated with masculinisation. Thus in Holmes's (1924) patient, a woman of 24, there was a masculine growth of hair and enlargement of the clitoris; at the same time the uterus atrophied and menstruation ceased. With the removal of the adrenal tumour there was a return to normality. In male adults there may be a development of the breasts with secretion of the mammary glands and a female type of adiposity; simultaneous atrophy of the testis and penis and loss of libido also occur. With removal of a tumour there is a return to normality (Holl, 1930).

Thus a tumour of the adrenal cortex may apparently stimulate the development of male sexual characteristics and inhibit female sexual characteristics, or conversely it may stimulate the development of female sexual characteristics and inhibit male characteristics.

In Addison's disease amenorrhœa, absence of libido, impotence, and atrophy of the testis may occur. Adequate therapy with cortical extract tends to produce a return to normal sexual function (Rowntree and Snell, 1931; Levy Simpson, 1932).

INFLUENCE OF ADRENALECTOMY IN ANIMALS

The effects of adrenalectomy on sex organs might indicate a function of the adrenal gland. Freed, Brownfield, and Evans (1931), who review the voluminous literature on the effects of adrenalectomy in the male rat, find that most observers report degeneration of the tubules of the testis. In their own experiments the testes were pale, soft, and œdematous, and in immature rats were lighter than those of control animals; "histologically spermatic tubules were ragged, fragmented, and disorganised; clumps of cells lay in the lumina and often only the germinative layer remained in position; in the adult testis the spermatocytes were severely affected, staining ghost-like with eosin. The mature testis undergoes as great a degeneration as the immature." The gonad-stimulating hormone of pregnancy urine was found to cause hypertrophy of the seminal vesicles in the adrenalectomised rat, but the degeneration of the testis continued.

Carr and Connor (1933) noted loss of libido and potency and degeneration of the cells of the seminiferous tubules in the adrenalectomised male rat.

Martin (1932) obtained suppression or irregular appearance of the œstrous cycle in about 88 per cent. of adrenalectomised rats. The ovaries were one-third to one-half the normal size and contained solid masses of persistent corpora lutea; there were a few small follicles but no large mature ones. Homotransplants produced a return to normal. Fall of body-weight and diminution of food did not suppress the œstrous cycle in control animals; nor did the administration of vitamins A, B, D, and E prevent the changes following adrenalectomy in rats. Martin believes that the adrenals influence œstrus indirectly through the pituitary, since he found that (*a*) the gonad-stimulating hormone of the sheep's pituitary gland restored the cycle in adrenalectomised rats; (*b*) the hypophysis of adrenalectomised rats when transplanted had a gonad-stimulating power less than that of normal animals; (*c*) there was a decrease in size and staining reaction of oxyphil cells of anterior lobe of hypophysis of adrenalectomised rats.

Carr and Connor (1933) noted in the female adrenalectomised rat the cessation of œstrus, degeneration of corpora lutea, cessation of pregnancy by abortion, and absence of lactation. Corey and Britton (1933) also found that removal of the adrenal glands resulted in complete suppression of the œstrous cycle in about 90 per cent. of rats.

EFFECT OF INJECTIONS OF CORTICAL EXTRACT

A. Normal animals.—Corey and Britton (1931) produced precocious sexual maturity in male and female rats by the injection of cortical extract. The extract was prepared in their own laboratory according to the method of Swingle and Pfiffner. In the male rat there was no apparent increase in the size of the testis, but in histological section the tubules appeared larger in diameter, and the cells presented a closely packed or compressed appearance. Spermatogenesis was found from 35 days of age onwards, whereas in the control animals spermatogenesis did not occur before the 42nd day. "It is thus apparent that the testis does not respond to the extract to the same extent as does the ovary." No mention of prostate is made. The pituitary gland was found to be increased in size, especially the anterior lobe, in which there was a marked increase in the number of eosinophil cells. No macroscopic or microscopic changes were observed in the thyroid, parathyroid, and adrenal glands.

Klein (1931) using an extract prepared by Müller, untested for potency on adrenalectomised animals, obtained positive results in the male rat. The penis grew more rapidly in the injected animals, but its final measurement at the end of eight weeks was no greater than that of the controls. The epididymis and seminal vesicles were, however, more developed, and in one series the testis was larger. No effect on spermatogenesis was obtained. Müller (1931), using the same extract as Klein, obtained some inhibition of the female organs. Kaplan (1932) reviewed the work of Klein and Müller; and, using a series of extracts prepared in different ways, concluded that inconstant results are obtained with any one extract prepared by the same method for each experiment.

Atwell (1932) found that injections of suprarenal extract, prepared by Hartmann's method, produced considerable enlargement of the ovaries in hypophysectomised frogs.

In contrast to these findings there is a considerable amount of evidence contradicting the positive findings of Corey and Britton. Thus Gaunt and Parkins (1933) used an extract made according to the method of Swingle and Pfiffner, and assaying 20 dog units per c.cm.; their technique and dosage followed closely that used by Corey and Britton. In both male and female rats "no indications of precocious sexual maturity, or of other effects of prolonged treatment were observed." Carr and Connor (1933) also used an extract prepared according to the method of Swingle and Pfiffner, and tested for potency on adrenalectomised rats. They were quite unable to produce precocious sexual development. In a previous report Connor's results were also negative.

Robson and Taylor (1933) could produce no hypertrophy of the sexual organs of male rats. There was some evidence of an inhibiting effect on the testis, but their own work and that of Moore and Price suggests that similar inhibition and degeneration of tubules results from lipoid extract of heart muscle. The inhibiting factor may not be specific.

Cleghorn (1932), using an extract made according to the method of Swingle and Pfiffner, obtained negative results in male and female mice. Atwell (1932) found that cortical extract failed to repair the atrophy of the gonads or restore the interrupted œstrous cycle in hypophysectomised rats. Smith and Engle (1927) obtained completely negative results with adrenal transplants in male and female rats, although the same technique with pituitary transplants produced sexual precocity in both sexes.

B. Adrenalectomised animals.—Swingle and Pfiffner (1932) record that adrenalectomised dogs, maintaining good health with cortical extract, passed through normal periods of heat and pregnancy. Grollman and Firor (1933) found that cortical extract permitted adrenalectomised female rats to become pregnant, give birth to normal litters, and nurse them. Corey and Britton restored normal œstrus in adrenalectomised rats by injecting cortical extract or Theelin or Antuitrin S.

In contrast to the above results, Carr and Connor (1933) found that injections of a potent cortical extract (made and assayed after the manner of Swingle and Pfiffner) did not prevent or influence the changes in sexual function and structure following adrenalectomy in male and female rats.

THE PRESENT INVESTIGATION

The effect of a potent cortical extract on weight and histological structure of sexual, endocrine, and some other organs of normal and castrated male rats was investigated. The extract was made by Messrs. Allen and Hanburys, according to the method of Swingle and Pfiffner. Its potency had been assayed on adrenalectomised cats in the Laboratory of the Pharmaceutical Society (J. H. Burn) and had also been tested in severe cases of Addison's disease (Levy Simpson). The average daily dose of extract required to maintain an adrenalectomised cat alive was 3 c.cm.

Technique.—Five litters of normal rats and two litters of castrated rats were used. Each litter contained an average of five rats. Injections were usually by the subcutaneous route, but with the larger doses the intraperitoneal route was used. Injections were given twice a day and in two litters three times a day. The daily dose of cortical extract varied from 0·2 to 1·2 c.cm. The diet consisted of an adequate synthetic paste supplemented by liver and wheat germ (Korenchevsky, 1932); the food given and the residue were measured and weighed, and the daily intake recorded. Injections of the normal rats were commenced at the age of 22 and 23 days, and were carried out for 14, 21, and 28 days. Two litters were castrated when 26 days old; injections were started 6 days after the operation, and continued for 29 days in one litter and 42 days in another litter. The technique was that employed by Korenchevsky (1930, 1932). The organs were rapidly dissected, freed from surrounding tissue, and placed into Bouin's fixative fluid. All the organs were weighed the next day and then prepared for histological sections. As carried out in this laboratory the method of investigation has yielded accurate and constant results. The demonstrated influence of testicular and gonad-stimulating extracts on the sex glands, as shown by Korenchevsky and collaborators using this method (1932–1933), leaves no doubt that any similar influence of cortical extract, if present, should have been detected in these experiments.

TABLE I.—*Actual Weights and Weights Calculated per 200 g. of Body-weight of Sexual and Endocrine Organs of Rats*

No. of rat.	Groups of rats.	Testes.		Prostate and sem. ves.		Penis.		Adrenals.		Thyroid.		Hypophysis.		Thymus.	
		A	200	A	200	A	200	A	200	A	200	A	200	A	200
1	Control rats	2·440	2·440	0·460	0·460	0·228	0·228	34·0	34·0	25·0	25·0	7·0	7·0	0·417	0·417
2	Control rats	2·289	2·461	0·486	0·523	0·233	0·251	35·0	37·6	20·8	22·4	7·0	7·5	0·374	0·402
	Average	2·365	2·451	0·473	0·492	0·231	0·240	34·5	35·8	22·9	23·7	7·0	7·3	0·396	0·410
3	Rats injected with cortical extract	2·535	2·392	0·533	0·503	0·230	0·217	31·2	29·4	17·8	16·8	7·6	7·2	0·391	0·369
4	Rats injected with cortical extract	2·347	2·510	0·449	0·480	0·225	0·241	28·8	30·8	20·4	21·8	7·4	7·9	0·370	0·396
	Average	2·441	2·451	0·491	0·492	0·228	0·229	30·0	30·1	19·1	19·3	7·5	7·6	0·381	0·383
	Percentage change	+3·2	0	+3·8	0	−1·3	−4·6	−13·0	−15·9	−16·6	−18·6	+7·1	+4·1	−3·8	−6·6

NOTE.—"A" denotes the actual weight of the organ; "200" denotes the weight of organ calculated per 200 g. of body-weight.

The *results* were completely negative. Compared with the control rats there was no change in weight of the prostate, seminal vesicles, penis, testis, adrenals, thyroid, pituitary, thymus, liver, kidneys, spleen, and heart, or in fat deposition. Microscopic examination also failed to reveal any changes. No evidence of premature or accelerated spermatogenesis was obtained. The atrophy of the prostate, seminal vesicles, and penis that normally follows castration was of the same degree and character in the injected castrated rats as in the control castrated rats. The food intake and gain in body-weight of the injected rats was similar to that of the control rats; no deleterious effects of the extract were observed.

In view of the negative character of the results it seems unnecessary to publish complete data for all litters. In Table I., however, the detailed results in

one litter are given to illustrate the method. In this Table, for economy of space, the changes in sexual and endocrine organs only are given, whilst in Table II. all average results for the seven litters are summarised.

TABLE II.—*Influence of Cortical Extract on Normal and Castrated Rats*

The average percentage change in weight of the organs of injected rats compared with control rats

—	Normal rats.		Castrated rats.	
	Actual weight.	Per 200 g. body-weight.	Actual weight.	Per 200 g. body-weight.
Testis	− 1·5	− 2·4	..	..
Prostate and seminal vesicles	+ 6·7	+ 5·8	− 9·1	− 0·9
Penis	+ 1·3	+ 0·5	+ 1·2	+10·0
Adrenals	− 0·4	− 1·1	−12·1	− 4·8
Thyroid	+ 9·1	+ 7·7	−16·4	− 9·7
Hypophysis	+ 4·6	+ 2·5	−13·5	− 6·7
Thymus	+ 3·5	+ 1·8	+ 4·2	+12·5
Fat (retroperitoneal or testicular)	+12·7	+10·2	− 2·1	+ 4·6
Liver	+ 7·5	+ 5·8	−10·0	− 2·4
Kidneys	+ 8·5	+ 7·2	− 5·0	+ 3·1
Spleen	+ 6·7	+ 5·7	− 8·0	− 0·1
Heart	+ 1·4	0	− 8·3	+ 0·3

DISCUSSION

The sum total of experimental evidence—with one notable exception (Corey and Britton, 1933)—indicates that the injection of cortical extract in normal rats is without obvious influence on the sex glands. The results of adrenalectomy on sex functions are, however, difficult to interpret because of the coincident changes in the appetite and metabolism of the animal and the concurrent dehydration.

Indirect evidence of a relationship between the sex organs and the adrenal cortex is suggested by hyperplasia of the cortex during pregnancy in guinea-pigs (Donaldson, 1924), œstrus in frogs (Atwell, 1932), ovulation in pigeons (Riddle, 1923), and following castration in rats (Korenchevsky, 1930). There is also an apparently close relationship between the adrenals and the hypophysis, and the hypophysis has a known influence on sex. Hypophysectomy in the rat is followed by hypoplasia of the suprarenal cortex (Smith, 1927). Clinically, aplasia of the suprarenal cortex occurs with hypopituitarism, whereas hyperplasia occurs in acromegaly (Moehlig, 1929).

The most striking evidence of a relationship between the adrenal cortex and sex is that shown by tumours. Can these clinical observations be explained on any other basis than a direct influence of the adrenal cortex on sex? It is conceivable that an undetected basophilic adenoma of the pituitary gland is associated with tumours of the adrenal cortex (Cushing, 1932). In such circumstances it might be postulated that the pituitary adenoma, and not the adrenal tumour, produces the changes in the sex organs. Against this hypothesis are the clinical results of removal of the adrenal neoplasm; although it might be suggested that this operation also inhibits the pituitary basophilic adenoma, should such be present. Another difficulty is the unilateral character of the neoplastic changes, and the fact that the opposite adrenal gland may be atrophied, as recorded by Rowntree and Ball (1933). Careful examination of the pituitary in all cases of adrenal neoplasm will decide whether such a hypothetical influence of the pituitary can be excluded.

Another hypothesis to be considered is that of Krabbe (1921). The cortex arises from the Wolffian ridge in common with the ovary and testis, and it may be that primitive sex cells are incorporated in the cortex. Thus the cells of a hypernephroma may arise from these primitive undifferentiated cells, and, therefore, influence sexual organs.

An alternative explanation would be that a cortical extract may contain the factor necessary to maintain life—but not the sex factor.

SUMMARY

It has not been possible to demonstrate any influence of a potent cortical extract on the sexual, endocrine, and some other organs of normal or castrated male rats. The difficulty of harmonising this finding with the clinical evidence of the influence of adrenal tumours on primary and secondary sexual characteristics is emphasised.

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MILLER GENERAL HOSPITAL.—At the annual meeting of this hospital last week Lord Queenborough, the president, stated, in illustration of the rapidly growing strain upon the out-patients' department, that, compared with 1931, the attendances had increased by 50,000. Plans have been prepared for a new building which it is hoped to erect in the near future.

A CENTRAL MALARIA LIBRARY.—A malaria library was founded in Rome by the Stazione Sperimentale per la Lotta Antimalarica in 1925, and an index to malarial literature is issued annually by the station. To make the library as complete as possible all malariologists are asked to send books, reports, and articles on malaria to it, and photostat copies of any article in the library may be had for the cost of reproduction. All publications and inquiries should be addressed to the director of the station, Corso Vittorio Emanuele 168, Rome.

THE CLINICAL APPLICATIONS OF DINITRO-O-CRESOL

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II*.—A STUDY OF MYXŒDEMA

IN previous publications [1 2] it has been shown that the administration of dinitro-o-cresol is attended by an increase in the basal metabolic rate in both animals and man, and that, further, it is possible to maintain the basal metabolic rate at a level some 30–50 per cent. above normal without the appearance of untoward symptoms. In view of these findings it was decided to investigate whether the administration of this compound would be capable of (*a*) increasing the basal metabolic rate of an untreated case of myxœdema, and (*b*) taking the place of thyroxine or thyroid extract in the alleviation of the specific symptoms of myxœdema.

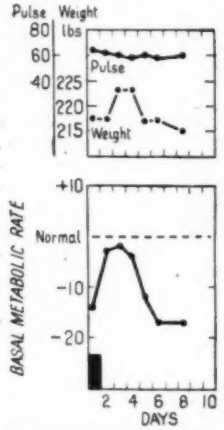

FIG. 2.—Effect of a single dose (290 mg.) on basal metabolic rate of the same patient.

The subject selected was a man, aged 42, who had had well-marked myxœdema and had been attending hospital for three years. The maintenance dose of thyroid required to keep his metabolism at a normal level and rid him of his symptoms of hypothyroidism was grs. 2 (B.P., 1932) daily. The administration of thyroid extract was stopped and the symptoms of myxœdema were allowed to develop. At this stage the basal metabolic rate as determined by the Benedict-Roth apparatus was −18. It was decided to repeat the experiments described in our last paper.

In the first place, the effect of administering dinitro-o-cresol by mouth in gelatin-coated capsules at the rate of 3 mg. per kg. body-weight was studied. From Fig. 1 it can be seen that the basal metabolic rate increased rapidly from −18 to +73 in five days. After the fifth day the administration was stopped owing to the appearance of the symptoms described in our previous paper. After withdrawal of the drug the basal metabolic rate fell rapidly to its original level, as occurred in the previous cases. From these observations it appears that the response of the myxœdematous

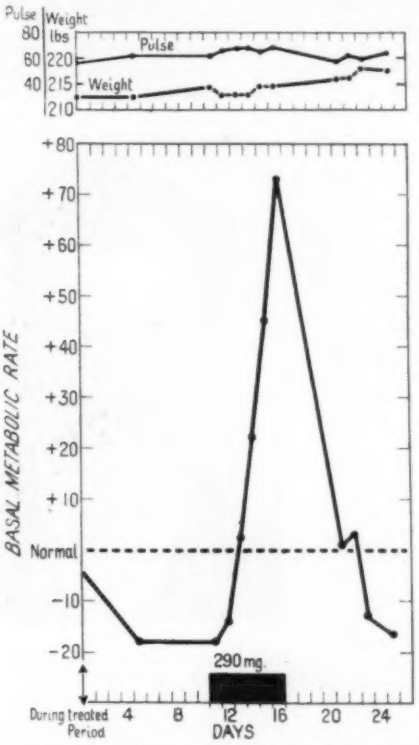

FIG. 1.—Chart showing increase of basal metabolic rate in a case of myxœdema on a dose of 290 mg. dinitro-o-cresol daily.

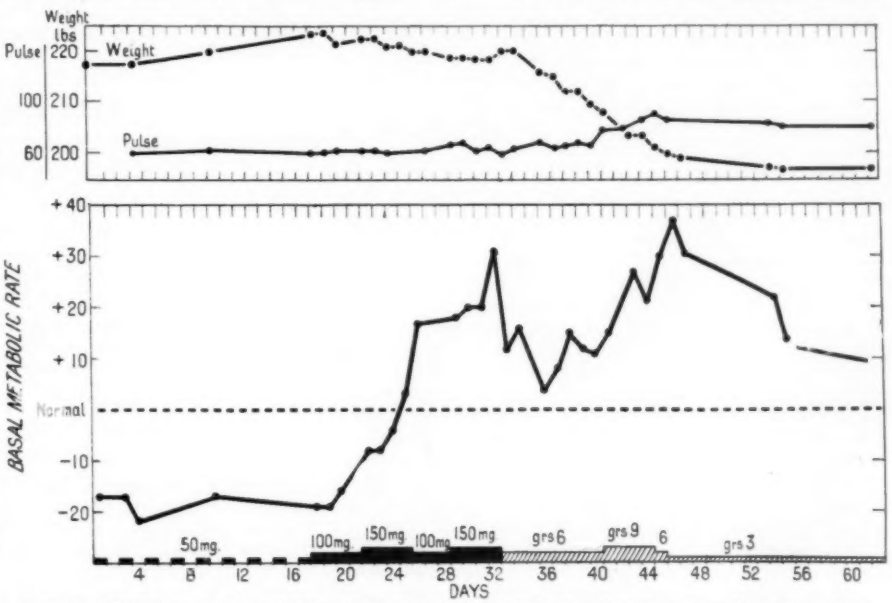

FIG. 3.—Behaviour of the patient's weight, pulse-rate, and basal metabolic rate under various doses of dinitro-o-cresol (mg.) and thyroid extract (grs.).

* Part I. appeared in the previous issue of THE LANCET.

patient is in no way different from that of the normal person.

The second series of observations consisted of administering a single dose of 3 mg. per kg. body-weight. From Fig. 2 it can be seen that the basal metabolic rate rises from −14 to −2 by the end of the second day and then falls rapidly to its original level. It appears from this that whilst the myxœdematous patient responds to a single dose in the same manner as a normal person the rise in this case is not so marked.

FIG. 4.—B.M.R. raised to +20 by dinitro-o-cresol. Myxœdema unrelieved.

In the third series of experiments, employing the information gained from the previous investigation, sufficient of the drug was administered to maintain the basal metabolic rate at a constantly increased level. It was found that in order to keep the basal metabolic rate of this patient above +20, 100 to 150 mg. per day had to be administered. In Fig. 3 will be seen the results of the administration during which the basal metabolic rate varied between +20 and +30. The clinical condition of the patient at this period was very striking. Although the basal metabolic rate varied between +20 and +30 he still presented the characteristic appearance of a severe case of myxœdema. Fig. 4 shows the appearance of the patient at this time, and it is interesting to contrast it with Fig. 5 which shows the patient's condition after ceasing the administration of dinitro-o-cresol and reinstituting the treatment with thyroid extract. The second portrait, with all evidence of myxœdema departed, shows the patient with a basal metabolic rate of +10.

Further reference to Fig. 3 indicates very interesting changes in the patient's weight. On stopping the thyroid extract the weight rises slowly until the basal metabolic rate is increased to +30 by the administration of dinitro-o-cresol. During the period that the basal metabolic rate is raised it can be seen that there is a slight fall in the weight. At the point, however, when the dinitro-o-cresol was replaced by thyroid extract there is a very sharp fall in weight. Reference to the pulse-rate is also interesting. The increase in pulse-rate during the administration of dinitro-o-cresol was very slight, but on the reinstitution of the thyroid extract in place of the dinitro-o-cresol, the increase is very marked. This again bears out the evidence brought forward in the previous paper which emphasised that no indication of the basal metabolic rate may be obtained by a study of the pulse-rate.

CONCLUSIONS

These results indicate very clearly that metabolic stimulants of the type of dinitro-o-cresol are of no use in alleviating the symptoms of myxœdema despite the fact that they are capable of causing an increase in the basal metabolic rate of the same order as in normal cases, and also of the same order as thyroid extract or thyroxine. The theoretical implications of these results are considerable. The relief of myxœdema and the power of raising the basal metabolic rate appear to be two separate functions, one of which is possessed by drugs of the dinitro-o-cresol type but both of which are possessed by thyroxine. Another possible explanation lies in the possibility that the increase in metabolism induced by dinitro-o-cresol may be different from the normal metabolic process.

FIG. 5.—B.M.R. raised to +10 by thyroid. Myxœdema completely relieved.

Dr. T. Izod Bennett has kindly supplied us with the clinical facilities for performing this investigation. We have to thank British Colloids Ltd. for material and for a grant towards the expenses of this investigation. It is a pleasure to thank Dr. Trescott Brinkworth for his care and trouble in preparing the photographs.

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PELLAGRA:

ITS CLINICAL FEATURES AND PATHOLOGY

WITH OBSERVATIONS ON THE TREATMENT OF ITS NERVOUS MANIFESTATIONS BY MASSIVE DOSES OF IRON

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PELLAGRA is one of the very common endemic diseases of Egypt, although it is relatively rare in the surrounding countries, probably because of dietetic factors. The disease is almost confined to the fellah (farmer) class, but we very occasionally see it in a town-dweller when there is some predisposing factor, such as protracted diarrhœa.

Its incidence in Egypt has been variously estimated by different observers.

Sandwith[1] after ten years' study considered that between 35 and 62 per cent. of the total population were affected with the disease. His figures included very mild or "larval" cases which are often not included in pellagra statistics. At the present time this estimate seems to be too high. Stiven gives the incidence as 4 per cent.; on the other hand, H. Wilson[2] holds that Stiven's estimate was on the low side.

It is difficult to form an exact opinion as to its incidence owing to the difficulty of diagnosing early cases and to many other factors; figures from admissions to general hospitals are of little assistance to us in this respect. According to Wilson there was an increase from 1916 to 1922 which he relates to low wages and high cost of foodstuffs. It may be noted, however, that the years 1918–19 were exceptionally good economically. Whether there has been a similar increase in the last few years of economic stress is difficult to determine at present, since no statistics are yet available.

The cases of pellagra admitted to Kasr-el-Aini Hospital (K.A.H.) during the years 1920–30, as shown in the accompanying Table, progressively decreased from 129 in 1920 to 63 in 1930—in other words from 3 to 1 per cent. of the total admissions

Cases of Pellagra admitted in K.A.H. compared with Total Admissions in Medical Wards

Year.	Cases of pellagra admitted.	Total admissions in medical wards.	Percentage.
1920	129	3407	3·7
1921	119	3500	3·4
1922	126	3700	3·4
1923	116	3916	2·9
1924	52	3132	1·6
1925	87	5236	1·4
1926	89	5442	1·6
1927	87	5834	1·3
1928	58	6149	0·9
1929	72	5589	1·2
1930	63	5752	1·09

to the medical wards. This does not necessarily indicate a proportional diminution in the total number of cases in Egypt, for K.A.H. admits only very few of these patients, limiting itself to such cases of pellagra as are required for teaching purposes or cases showing special features of severity or interest; also frequently cases are admitted with pellagra, but suffering at the same time from anæmia, combined sclerosis of the cord, or splenomegalic cirrhosis, and the admission is therefore frequently recorded under one of these headings, the associated pellagra not being mentioned.

Pellagra is commoner in Lower than in Upper Egypt. That this difference may have some relation to the kind of cereals principally cultivated seems probable, maize being largely replaced in Upper Egypt by millet, wheat, beans, and lentils. However, it is difficult to exclude other predisposing factors, such as differences in the incidence of helminthic infection, especially intestinal schistosomiasis.

CLINICAL MANIFESTATIONS

The disease is characterised by four sets of symptoms: cutaneous, digestive, nervous, and psychic.

THE SKIN

The first are the most obvious, and in the fully developed form consist of a symmetrical dermatitis affecting the exposed areas of the body—the forehead, a patch on each cheek joined by a band over the bridge of the nose giving a butterfly appearance, the skin over the mastoid process and around the base of the neck from the nape behind to a triangular area over the upper part of the front of the chest where the gellabia (clothing) opens (necklace appearance). In addition to the dermatitis a frequent characteristic feature over the face is a peculiar seborrhœa, the sebaceous glands being engorged with their contents, which form small, yellowish, slightly raised specks over the cheeks, nose, and forehead, giving these parts the appearance of having been sprinkled with grains of sulphur.

The dorsal aspects of the hands and of the distal parts of the forearms are similarly affected with the dermatitis, and the patches often extend for some distance over the volar aspect, but the phalanges are usually spared. The interdigital clefts show desquamation, and this appearance may persist long after the other manifestations have disappeared (washerwoman's hands). The dorsum of the feet is affected in the same way, except the part which is covered by the shoe. The affected parts are frequently the seat of burning pain in the early stages.

The dermatitis is not always entirely limited to these parts; affection of other parts of the body is seldom seen, but any exposed area may be involved, and we have seen a patient with a small round patch on the skin over his shoulder corresponding exactly to a hole in his garment. Points of friction are also attacked, the lesions there varying from mere roughness of the skin to actual hyperpigmentation and scaling, the more acute types of lesion, however, not being observed in these sites. The points of the elbows, the trochanters, the knees, and the sacral region are favourite friction sites; the genitalia are also sometimes affected. But in one case we observed big patches of hyperpigmentation, scaling, and roughness over the thorax and in the axilla, and neither sunlight nor friction could be claimed as exciting factors. This man had a particularly marked rash which extended above the knees and elbows (Case 4).

The type of rash varies according to the period at which it is observed. In the early stages it is usually a simple erythema, but sometimes in very acute and severe cases petechiæ or bullæ may occur and desquamation with oozing may supervene, forming the "wet type" of pellagra; secondary infection may complicate the picture, resulting in the formation of septic raw areas sometimes covered with scabs.

The initial erythema may progress no further, the rash clearing up to reappear during the next season. This erythema is sometimes very difficult to differentiate from ordinary sunburn. In the interval between attacks nothing may be left, but sometimes, especially after repeated attacks, the skin becomes rough and dry and its ridges exaggerated; hence the name pellagra. Scaling of the pellagrous areas results in a typical appearance, showing raw, pink, thin patches in the scaly dark skin. After some time these thin pink areas become brown and papery, the skin having undergone atrophy.

The more acute lesions are usually seen on the face and hands. These skin manifestations are considered by some observers to be the first manifestations of the disease and to be essential in its diagnosis, while many others hold that a variety exists (pellagra sine pellagra) where the skin is spared, the diagnosis being based in these cases on the gastro-intestinal and nervous manifestations. Sandwith calls pellagra a cerebro-spinal disease with cutaneous and digestive complications.[1]

THE ALIMENTARY TRACT

In many of our cases we found that nervous, or still more frequently digestive, symptoms or signs had preceded the rash by an interval of weeks or months. The digestive tract is attacked all along its length. Stomatitis, soreness and burning in the mouth, ulceration, and salivation are often complained of. The tongue is almost always glazed, with diminution or complete atrophy of the papillæ. Occasionally, however, we have observed a tongue apparently quite normal when the other signs of the disease, including dermatitis, have been marked. Epigastric pain, varying from mere discomfort to actual burning pain, anorexia, dyspepsia, and diarrhœa are almost constant, and achlorhydria is very common. Of our cases more than half showed an absence of free hydrochloric acid, and the histamine test usually produced no response.

Pathologically the mucosa of the whole alimentary canal is extremely thinned and atrophied, while in severe cases actual ulcerations are sometimes seen.

THE NERVOUS SYSTEM

The nervous manifestations are protean. On the sensory side, paræsthesias, tingling, and numbness, especially in the lower limbs, are the commonest. A burning sensation in these parts is sometimes noted. Rarely is there any objective loss of sensation, but the parts affected with the dermatitis may be slightly less sensitive to superficial stimuli. The deep sensations in our cases have usually but not always been preserved, and Romberg's sign has rarely been positive.

On the motor side, stiffness and weakness associated with increased reflexes is the change most frequently found, and cramps may be complained of; more rarely, weakness and wasting, associated with weak or lost reflexes, indicating a peripheral nerve lesion, are a prominent feature. These motor symptoms may be so severe as to cause the patient to be completely bedridden.

Even in the cases with markedly exaggerated reflexes it is exceptional to find other indications of pyramidal tract involvement, such as Babinski's sign or clonus. Ataxia is not uncommon, while tremors, especially of the face and upper limbs, may be observed. In one of our cases the picture of amyotrophic lateral sclerosis was associated with pellagra, while in another a nervous condition resembling disseminated sclerosis was followed by a dermatitis exactly similar to pellagra. Whether these cases were pellagra with nervous manifestations or pellagra on the top of these diseases was difficult to determine.

Some authors consider that the spasticity is of extra-pyramidal origin. Margarot and Plagniol [3] described two cases in which they considered this system was affected. In one of these cogwheel rigidity was present, and both had diplopia and interference with accommodation. They call this a pseudo-encephalitic syndrome. Dorogan and Capri,[4] investigating 21 cases of pellagra, found that the normal relation between the chronaxie and the duration of the myogram which, according to Lapicque and Bourguignon's work, holds both in normal and pathological physiology, was reversed, the chronaxie in these cases being shortened while the duration of the contraction was prolonged. They concluded that the hypertonus in these cases was similar to that found in the parkinsonian syndromes and denoted a lesion of the mesencephalic centres (locus niger and globus pallidus).

The cranial nerves are usually spared, but diplopia and defective accommodation, and sometimes facial paralysis, have been recorded.

MENTAL CHANGES

Mentally we found these patients to be almost always dull, their cerebration being very slow and their memory usually impaired, while very often they mention events that have never happened. Hallucinations are frequent in late cases and, when this stage is reached, hope of recovery is usually very slight. Severe headache and insomnia are also common symptoms. Definite melancholia with suicidal tendencies may supervene, while some cases become maniacal, excited, and restless. Euphoria is sometimes observed, the patient believing he is cured and imagining he is very powerful, while he is bedridden and unable to move. The pellagrins in countries where pellagra is rife often constitute a large proportion of the patients in the asylums.

PATHOLOGICAL CHANGES

A characteristic feature of pellagra is that it affects the whole nervous system from the cortex to the peripheral nerves, the lesions being irregular and scattered, with no true systemic degeneration.

The changes in the peripheral nerves are considered by K. Wilson [5] to be a constant feature and are often very advanced. The myelin sheaths show irregular thinning, with only rarely fragmentation or complete Wallerian degeneration, while irregular small collections of lipoid material may be shown by Marchi's method of staining. Compound granular corpuscles can be found in the capillaries of the perineurium and mastzellen and peculiar granules showing metachromatic staining with thionin blue. The granules of Reich can be seen.[6] The nerve-fibres themselves are rarely affected, except in very advanced cases. There is usually some interstitial œdema but no collections of cells, and this absence of cells is constant all through the nervous system.

The posterior roots and to a lesser degree the anterior roots show the same changes.

The cells of the posterior root ganglia show varying degrees of swelling and atrophy, eccentricity of the nucleus, central chromatolysis, and deposition of pigment, which changes are also observed in the cells of the grey matter of the spinal cord, more especially in Clarke's column. The intermedio-lateral tracts show some diffuse degeneration and atrophy, while the anterior horn cells tend to show more chronic changes in the shape of gradual shrinking and atrophy; these latter cells are not usually constantly affected. Other observed changes are a loss of the neurofibrils, atrophy of the nucleus, and poor staining of the nucleolus.

This cellular destruction can be observed at all levels in the nervous system, the Betz cells in the cerebral cortex, the basal ganglia, the peri-aqueductal region, and the floor of the fourth ventricle being diffusely affected in the same scattered unsystematised way, while the Purkinjé cells in the cerebellum and the cells of the cranial nerve nuclei share in the same changes. Orton and Bender [6] draw a distinction between acute diffuse degenerative changes arising in the immediate antemortem period and affecting the spinal cord cells, the cerebral cortex, the basal ganglia, and the brain stem with acute chromatolysis, fatty degeneration, and neuronophagia, and more chronic changes, cell losses, gliosis and glial scarring affecting the lateral horns, the floor of the fourth ventricle, and the aqueduct of Sylvius. They hold the latter lesions responsible for the symptoms, which in their case were mainly vasomotor and gastro-intestinal.

The same absence of any inflammatory reaction is pointed out by Mott.[7] Chronic thickening of the ependymal lining with obliteration of the central canal has been described, a condition which, together with the diffuse degenerative changes and the absence of any inflammatory reaction, points to a chronic toxic process at work.

The pathological alterations in the white matter show the same irregularity, the most affected part being usually Goll's column, especially about the cervical region, as at that level the degenerated fibres which at lower levels were scattered have collected together, giving an appearance of systemic degeneration. Similarly the pyramidal fibres which are descending look more affected low in the lumbar region. The spino-cerebellar tracts are similarly affected but to a lesser degree, while the lateral columns are diffusely attacked, the lesions not being confined to the pyramidal tracts, a condition which K. Wilson calls "pseudo-systematised"—i.e., resembling combined sclerosis, but not confined to anatomical paths. The histopathological process, however, is similar to that of combined sclerosis—viz., œdema, myelin degeneration, compound glial corpuscles, and absence of inflammation.

Winkelman, in 1926,[8] pointed out the discrepancy between the diffuse and variable histological changes and the rather fixed clinical picture. According to him, the most frequent changes are fatty degeneration, chromatolysis, and pigment deposition, with chronic sclerosis of the posterior and lateral column fibres, of Clarke's column and Lissauer's zone, and increased glia in the nervous tissues and connective tissue in the ganglia. Experimentally, E. Mellanby [9] produced similar pathological changes in dogs on diets rich in cereals and poor in vitamin A. He found that ergot or rye germ could also produce these changes, but that an essential condition was deficiency of vitamin A, the administration of which prevented the appearance of these changes and cured them. The bearing of these experiments on ergotism is obvious, and Mellanby, extending his conclusions to pellagra, considers that, while the skin manifesta-

tions may be due to vitamin-B deficiency, the nervous complications are due to, or predisposed to, by vitamin-A deficiency, this explaining the rarity of pellagra in countries where yellow maize (rich in carotene) is consumed—e.g., Java and the Dutch East Indies—as compared with countries where white maize is cultivated.

THE PRESENT SERIES OF CASES

Of the 26 cases of pellagra which we have studied in hospital in the last 12 months, all had the typical rash, 24 had a glazed tongue, 21 showed nervous or mental manifestations (this includes cases showing only increased reflexes), and 15 had only cutaneous and nervous symptoms, while in 6 digestive symptoms were also present. Of the remaining 5, 2 had accompanying digestive disturbances and 3 had only cutaneous manifestations.

The cutaneous lesions were of the usual type, roughening, pigmentation, and desquamation predominating. The early skin changes were infrequently observed, erythema being present only in 5 cases. This is probably due to the patient taking the early manifestations for a simple sunburn and not coming for treatment until other symptoms appear. In many cases, however, even after careful inquiry, no history of any acute dermatitis could be obtained, the lesions, according to the patients, beginning as roughening with pigmentation and later exfoliation. The hands were affected in every case, the feet in practically every case. The neck was free in 5 cases.

The patients only rarely attended because of their cutaneous signs, and these were rarely the first manifestations of the disease, being usually preceded for varying intervals, extending sometimes up to nine months, by various disturbances; weakness, giddiness, vertigo, palpitations, and dyspnœa on exertion were the commonest. Severe epigastric pain and dyspepsia, accompanied in 1 case by vomiting, were marked in 6 cases. In 2 cases the disease began with paræsthesia of the lower limbs two weeks before the skin became manifestly affected, while in a third spasticity of the legs was the first thing the patient noticed. Diarrhœa frequently preceded the skin lesions, this being probably due in some of these cases to the not infrequent marked helminthic infestation.

The tongue and mouth were affected in practically every case. Only 2 cases out of the 26 were normal in this respect, and it may be of interest to note that both had achlorhydria. The usual finding is a glazed, shiny, raw tongue. In 2 cases this was accompanied by small ulcers with a sensation of burning or soreness in the mouth, and in 1 case bleeding gums were found.

Diarrhœa was found in 18 cases, in 1 of which no parasitic infestation of the bowel was present, and in 3 there was only ankylostomiasis. All the others had bilharziasis as well. One of the ankylostoma cases had attacks of diarrhœa recurring each season with the pellagrous rash.

Apart from diarrhœa and tongue affection, digestive disturbances were common and consisted of epigastric pain, continuous but increasing after meals, or of a sensation of burning in the same region, while the appetite was generally poor. These symptoms were found in 8 cases, while in only 1 case was vomiting a marked feature. Very frequently great difficulty was experienced in introducing the ordinary Ryle's tube for fractional gastric analysis, the patient often being unable to swallow it at first owing to hypersensitiveness of the nasopharynx; in other cases the meal was vomited early in the test. We could, however, analyse the gastric juice in 25 out of these 26 cases, and we found that 13 patients (52 per cent.) had achlorhydria. In these cases histamine injection produced no secretion of free acid, although in some cases the actual quantity of gastric juice was increased. The patients with dyspeptic symptoms had achlorhydria rather more frequently than the others—viz., 6 out of 8 (75 per cent.). There seemed to be no relation between the achlorhydria and the degree of involvement of the nervous system.

Neurological changes were entirely absent in 5 cases only. The knee-jerks were not present in 1 case and were very weak in another. They were, however, more commonly exaggerated (16 cases)—i.e., 18 cases in all showed some abnormality of the knee-jerk (80 per cent.). The ankle-jerks were brisk in 13 cases (50 per cent.) and absent in 1 case. True ankle-clonus was observed in 1 case only. It was associated with a knee-clonus and a bilateral extensor plantar response. This latter sign was found in 2 other cases and was then unilateral, while in 1 case it was indeterminate. The abdominal reflexes were usually brisk, but in 1 case they were absent.

Paræsthesias were present in 3 cases, while a fourth complained of cramps in the legs. The sense of position was usually retained, being doubtful in only 1 case; but the results of subjective examination could not be relied upon in these cases owing to the dull mental condition.

The most common mental abnormalities were dullness (5 cases) and melancholia (4 cases); one of this latter group apparently followed prolonged worry over impotence. In 1 case the patient was very irritable, nearly maniacal, while 2 patients had hallucinations. Insomnia was very marked in 1 case.

Not one of the 26 cases gave a history of similar affection in his family, although all the members were living under the same circumstances, having the same food, same drinking water, same clothing, and same work. Of the 26 cases 24 had some parasitic infestation, 7 only ankylostoma, 5 only *Schistosoma mansoni*, 12 both, in 3 of which there was associated ascaris. This high helminthic infestation rate of pellagrous patients, compared with the general infestation rate of the population of Egypt, suggests that infestation may play a part in the production of the disease and account for its occurrence in only certain members of a family, all of whom are on the same deficient, ill-balanced diet.

TREATMENT

No special treatment is necessary for the cure of the cutaneous and digestive manifestations. The ordinary hospital diet, after getting rid of any parasitic infestation, is quite sufficient to cure them, the rash usually disappearing within two to four weeks of commencing treatment. This, however, does not always bring about a cure of the nervous or mental manifestations. Once the latter have appeared in a well-defined form improvement is extremely difficult to obtain, but simple dullness or a feeling of depression easily disappears under this simple treatment.

Other treatments have been proposed from time to time, of which intravenous injection of sodium thiosulphate was suggested by Sabry.[10] We have tried this method without any apparent benefit.

Recently, however, Sargant[11] claims to have obtained recovery in cases of subacute combined degeneration of the cord associated with anæmia, Addisonian or otherwise, by the administration of Blaud's pill grs. 150 daily for six weeks. More recently he described one case treated on these lines

with benefit, where there was no associated anæmia.[12] Cases of Addisonian pernicious anæmia under this treatment, without administration of liver, showed amelioration in the signs of nervous disorder without, however, showing any improvement in their anæmia. He concluded that the nervous changes are the result of the perverted iron metabolism, and can be corrected by these huge doses of iron. Analysis of his cases shows that, while the functional disturbances (ataxia, locomotion) have greatly improved, no extensor plantar response has ever disappeared, while the sensory disturbances, either subjective or objective, have only become diminished in intensity. It is probable that while early pathological changes, such as œdema, may disappear, neurons actually destroyed will not recover.

Owing to the similarity between the pathology of the nervous lesions of the anæmias described and that of the lesions accompanying pellagra, we tried this form of treatment in a few of our cases, and our results agree very closely with the results obtained in Sargant's cases—i.e., considerable improvement in the functional state of the nervous system with little corresponding changes in the nervous signs.

CASES TREATED WITH IRON

CASE 1.—Male, 17 years, fellah. Pellagrous rash over hands, feet, face, neck, and chest of one year's duration. Glazed tongue. Achlorhydria not responding to histamine injection. Ankylostoma and *S. mansoni* affection present. Unable to walk; brisk knee- and ankle-jerks; extensor plantar response on right side. No sensory disturbances. Red cells, 1,900,000; hæmoglobin percentage, 20. Blaud's pill grs. 150 daily for two months.

On discharge: patient able to walk unaided and gained much weight. Rash disappeared after second week. Red cells, 4,300,000; hæmoglobin percentage, 62 (Sahli method). Tendon-jerks less brisk than on admission. Right plantar reflex indeterminate.

CASE 2.—Male, 40 years, fellah. Complaint began with tingling and numbness of lower limbs two months before admission. Tongue glazed. Extensive pellagrous rash over feet, face, and hands extending to elbows. Seborrhœa of face. Achlorhydria not responding to histamine. Stools contained ankylostoma, ascaris, and *S. mansoni* ova. Mentally dull and euphoric, absolutely bedridden, brisk knee- and ankle-jerks; true ankle and patellar clonus easily obtained on both sides; bilateral extensor plantar response; superficial reflexes present. Sensations, superficial and deep, intact. Red cells, 2,200,000; hæmoglobin percentage, 26. Blaud's pill grs. 150 daily for six weeks.

On discharge: general condition much improved; weight increased considerably; red cells, 3,900,000; hæmoglobin percentage, 66; skin condition cured. He can walk without any support. No change, however, in the nervous signs; Babinski's sign, clonus, and brisk jerks still present.

CASE 3.—Male, 45 years, fellah. Has suffered from a pellagrous dermatitis during the last ten years. Weakness in the legs for four years and diarrhœa for six months. Achlorhydria not responding to histamine. Glazed tongue. Ankylostoma ova abundant in stools. Red cells, 3,700,000; hæmoglobin percentage, 42. Mentally the patient is dull and suffers from insomnia. He feels very weak on his legs. Brisk knee- and ankle-jerks; absent abdominal reflexes; plantar reflex flexor. No sensory disturbances. Blaud's pill grs. 150 daily for two months.

On discharge: patient feels much stronger and has gained much weight. Red cells, 4,900,000; hæmoglobin percentage, 80. Skin condition cured after three weeks' treatment. No change in the reflexes.

CASE 4.—Male, 25 years, fellah. Suffered from diarrhœa for the last two months and from pellagrous dermatitis for the last month. The rash extends up to above the knees, nearly up to the shoulders in the arms, and, in addition, there is a big patch over the back in the lumbar region and one near the right axilla. The face and neck are also extensively affected. Glazed tongue. Achlorhydria with no response to histamine. Stools contain ankylostoma and *S. mansoni* ova. Red cells, 3,500,000; hæmoglobin percentage, 55. Mentally the patient is dull. Plantar reflexes indeterminate. No sensory disturbances. Blaud's pill grs. 150 daily for six weeks.

Rash disappeared after the fourth week. Plantar reflexes flexor on discharge. Red cells, 4,700,000; hæmoglobin percentage, 80.

CASE 5.—Male, 35 years, fellah. Suffered from diarrhœa for the last six months. Weakness of legs for the last three months, and a pellagrous dermatitis for the last month. Is very emaciated. Tongue absolutely raw. Achlorhydria with no response to histamine. Red cells, 3,100,000; hæmoglobin percentage, 40. Absent knee- and ankle-jerks. Extensor plantar response on left side. No sensory disturbances. Blaud's pill grs. 150 daily for six weeks.

Result: no change in the reflexes. Patient died after six weeks from acute bacillary dysentery.

CASE 6.—Male, 30 years, fellah. For the last eight years had had yearly attacks of dermatitis in summer lasting four weeks. Skin of hands, forearms, neck, and legs shows hyperpigmentation. Tongue raw. Achlorhydria not responding to histamine. Red cells, 3,900,000; hæmoglobin percentage, 41. Ankylostoma and schistosoma affection present. Complains of severe headache, attacks of vertigo, general weakness, pains in knees and legs, and severe epigastric pain. Exaggerated knee- and ankle-jerks. Plantar response extensor on left side and variable on right side. Absent abdominal and cremasteric reflexes. No sensory disturbances. Blaud's pill grs. 150 daily for two months.

Result: great gain in weight and improvement in general condition. No headache or vertigo. Red cells, 5,100,000; hæmoglobin percentage, 78. No change in the signs of nervous involvement.

DISCUSSION

Witts[13] considers that the benefit seen in these cases is the result of improvement in their general health and not of any specific action of iron. On the other hand, Harris and Sargant[12] consider that the improvement is the result of the administration of these large doses of this drug, and they show equally satisfactory results in cases where nervous manifestations are not associated with any alteration in the blood picture from normal.

From a consideration of these six cases of pellagra it will be seen that, except in Case 5 who died of bacillary dysentery, definite improvement resulted from a six weeks' to two months' course of treatment in hospital on ordinary hospital diet and massive doses of Blaud's pill. Cases 1 and 2, who were unable to walk on admission, improved very markedly in their general condition, increasing very much in weight, and their hæmoglobin percentage rising from 20 and 26 to 62 and 66 respectively, and their red cells from 1,900,000 and 2,200,000 to 4,300,000 and 3,900,000 respectively.

Like the cases described by Sargant, despite the absence of any marked change in the physical signs of the nervous involvement, as the result of treatment, the symptoms in our pellagrous patients were very greatly ameliorated, so that even very severe cases were able to resume work. No special forms of encouragement or re-education in walking were practised; the patients were allowed to stay in bed until, feeling stronger, they began to get about the ward on their own.

All our cases suffered from a considerable degree of secondary anæmia, and so would be expected to show improvement in their general health as a result of the addition of iron to a well-balanced diet, but we

consider that the change brought about by the iron medication was much more than could be accounted for by mere improvement in their general state. We have been unable to find cases of pellagra with nervous manifestations showing no anæmia, and so have been unable to observe the effect of treatment in such cases.

During our previous treatment of cases of pellagra with a well-balanced diet alone, without the addition of large doses of iron, the results obtained were much less satisfactory than those reported by us in the present series. We are, therefore, of definite opinion that the administration of iron with a well-balanced diet is of extreme importance in the treatment of cases of pellagra showing nervous manifestations, bringing about a more rapid improvement in the patient's condition than if treatment with diet alone is carried out.

SUMMARY

Of 26 cases of pellagra all had the typical rash; 15 had nervous manifestations, 2 digestive, 6 both digestive and nervous, and 3 complained of the pellagrous rash only. Only 2 cases showed a normal tongue. The non-cutaneous manifestations frequently preceded the cutaneous ones. Diarrhœa was present in 18 cases; only in 1 of these could parasitic infestation of the bowel be excluded. Achlorhydria was present in about half, and these patients showed no secretion of free hydrochloric acid on injection of histamine.

There seemed to be no relation between the degree of involvement of the nervous system and the condition of the gastric juice. The neurological changes were: a brisk knee-jerk (16 cases), a brisk ankle-jerk (13 cases), Babinski's extensor plantar response (2 cases unilateral and 1 bilateral), true ankle-clonus (1 case), absent abdominal reflexes (1 case). The only sensory disturbance was subjective, paræsthesia being present in 3 cases. No objective sensory loss was ever observed.

Not a single patient gave a history of a similar affection in other members of his family.

Some parasitic infestation of the bowel was present in 94 per cent., a high percentage compared with the general infestation rate of the rural population of Egypt. This may have a bearing on the fact that only one member of the family suffered from the disease where the dietetic and other conditions were identical for all.

Satisfactory results were obtained in 6 cases with nervous manifestations by giving massive doses of iron, on the lines suggested by Sargant for subacute combined degeneration of the cord.

We are indebted to Dr. Sargant for his kindness in furnishing us with details of his method of treatment.

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SPONTANEOUS DISLOCATION OF THE ATLAS

WITH REPORT OF A CASE

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IN August, 1932, an engineer, aged 30, was admitted to the Birmingham General Hospital under the care of Dr. Stanley Barnes, complaining of curvature of the spine, stiffness of the neck, weakness of the right leg, and numbness, tingling, and weakness of the left forearm and hand.

Until five years before he had been an active, athletic young man. He then began to suffer from pain in the lower dorsal region, and within six months had developed a kyphosis for which he was treated by an orthopædic surgeon. A plaster-of-Paris jacket was applied and was worn for several months; the pain disappeared and he thinks that the kyphosis diminished. Twelve months before admission he again developed pain in the back, but on this occasion in the cervical region. He soon lost all rotatory movements of the head, the neck became more and more flexed, and latterly the chin had become so nearly in contact with the sternum that he could not open his mouth fully. He was treated by his own doctor as a case of rheumatism, and on the advice of Dr. Stacey Wilson was taking guaiacol carbonate capsules, and some improvement followed. In July, 1932, he experienced a weakness of the right leg, and found himself becoming awkward and clumsy with the left hand for the more intricate movements. It was at this stage that he was admitted to hospital for investigation.

The only point of interest in the previous history was the fact that at the age of 18 he had suffered from backache for a few days as a result of carrying a heavy drum. There was no history of syphilis, gonorrhœa, tuberculosis, or rheumatism.

He was a well-developed and muscular young man, with cardiovascular, renal, and pulmonary systems beyond suspicion. There was no urethral discharge, the teeth were sound, and the tonsils, though large, were apparently not septic; the oral pharynx was a little injected. The cervical part of the spine was rigidly flexed, with the chin almost touching the sternum, so that the mouth could not be opened fully, and there was much wrinkling of the forehead when the patient looked straight ahead. Lateral and rotatory movements of the head and neck were so diminished as to be well-nigh absent. The dorsal spine was kyphosed and movements were much limited; the lumbar region was normal in configuration and function. Neurological examination revealed a weakened grip in the left hand, an extensor plantar reflex on the right side, and a diminution of sensation for pain, heat, and cold in the right leg and foot. Manometric observations on the cerebro-spinal fluid by lumbar puncture showed that there was no spinal block; the fluid was normal both chemically and cytologically, and the Wassermann reaction was negative.

Radiography confirmed the presence of kyphosis and showed calcification of the cervicodorsal part of the anterior common ligament. It also revealed forward dislocation of the atlas on the axis, but there was no evidence of fracture of the odontoid process. On learning these findings the pharynx was examined with the finger, and one could feel, with startling ease, the anterior arch of the atlas projecting forwards behind the posterior wall.

DISCUSSION AND REVIEW OF OTHER CASES

Dislocation of the atlas on the axis can no longer be regarded as a rare condition; indeed, there are numerous records of patients having survived the accident and having led lives of undiminished usefulness subsequently. The unusual feature of the case we describe is that we could not elicit a history of the slightest trauma, in spite of the most careful questioning; the dislocation was seemingly entirely spontaneous. That the trauma in these cases may be comparatively trivial is well recognised. Kelly,[1] in 1905, described the case of a man of 47 who, whilst under detention for drunkenness, fell in the police cell, striking his head on the floor. He sustained a forward dislocation of the atlas and a fracture of the odontoid process of the axis. Ogilvy [2] recorded the case of a boy of 11 who, whilst throwing a ball, dislocated his atlas in a forward direction. Both these cases recovered. In his paper Kelly demonstrated, by anatomical dissections, three possibilities:

1. Dislocation of the atlas accompanied by fracture of the odontoid process.
2. Dislocation accompanied by rupture of the transverse ligament of the atlas.
3. Dislocation accompanied by slipping of the odontoid process beneath the transverse ligament.

He maintained that the first only of these varieties was compatible with life, because in the other two fatal pressure on the medulla would inevitably occur; only by fracture of the process could this pressure be avoided. Subsequent experience has shown that absence of fracture of the odontoid peg does not necessarily result in fatal pressure on the medulla. In Ogilvy's case power was lost in both legs by the fourth day after the accident, but complete recovery had taken place by the eleventh day. He points out that medullary pressure symptoms may be either absent, slight, or delayed, and agrees that forward dislocation of the atlas is often associated with fracture of the odontoid process, and sometimes also with transverse fracture of the atlas.

FIG. 2.—Photographs showing maximum degree of extension of neck. (Note wrinkling of forehead on attempting to look up.) These photographs were taken when treatment had been in progress for some weeks and considerable improvement had taken place.

Jacobs,[3] in an important paper, collected 24 cases of atlas subluxation. Two of these were fatal, 4 developed pressure symptoms, and 7 were associated with fracture of the odontoid process but remained free from signs or symptoms of medullary pressure. This series demonstrates that cases in which the odontoid peg remains intact may yet survive, although they are more liable to pressure symptoms than are those in which the odontoid is fractured.

Of special interest to us are the two cases of spontaneous dislocation of the atlas described in the same paper. The first was that of a child aged 5 years who, during the course of a febrile illness, developed a spontaneous dislocation of the atlas; and the second was a male of 17 with a similar dislocation, but in this instance the author admits the possibility of slight trauma. He also recorded a third case in which a boy of 8 years had a temperature of 103·5° F., and complained of pains in the neck, elbows, and knees. The painful neck was found to result from a backward dislocation of the atlas and axis. Jacobs concludes that there is a definite clinical condition unassociated with trauma wherein one of the joints of the atlo-axoid articulation becomes involved, resulting in spontaneous dislocation. He compares it with pathological dislocation of the hip-joint in typhoid fever, and because it is due to an effusion into the joint he follows Wittek and terms it "distension-luxation" of the joint.

FIG. 1.—Radiogram showing forward dislocation of the atlas.

Wittek,[4] writing in 1908, recognised that dislocation of the atlas might result from tuberculous or rheumatic disease. He describes the case of a boy of 11 years suffering from an alveolar abscess who, on the fourth day of his illness, complained of pain in the back of the neck, and the head became flexed and inclined towards the right shoulder. Radioscopy showed a luxation forwards of the atlas upon the axis. Wittek held that in this case, which is the earliest of its kind we have been able to find recorded, a metastatic effusion had taken place between the odontoid process and the anterior arch of the atlas, and between the transverse ligament of the atlas and the odontoid. This had caused a stretching and weaken-

ing of the ligaments, thus allowing the dislocation to take place; he thought it improbable that any tearing of the ligaments had occurred, as he considered that this would have resulted in sudden pressure by the odontoid upon the medulla with instantaneous death. Fitzsimmons [5] mentions a similar case, a girl of 11 years, in whom a partial dislocation of the atlas was discovered four months after a mastoidectomy had been performed.

Mr. Robert Milne informs us that he has seen several cases of spontaneous dislocation of this nature, mostly in young people, in association with rheumatic fever; in two cases with endocarditis. His view of the matter is similar to that of Wittek, and he thinks that these patients develop an inflammation of the bursa between the odontoid process and the transverse ligament, so that the latter softens and stretches, thus allowing the dislocation to take place. He points out that if the ligament gives way suddenly, so that the odontoid process presses backwards into the medulla oblongata, sudden death will almost certainly result. Indeed, sudden death in endocarditis may, in a few cases, really be due to this and not to a supposed myocardial failure.

COMMENTS

It would seem, therefore, that the case now recorded falls into the category of spontaneous dislocation. It was of rather gradual onset, and early neurological signs and symptoms were present. The point in which this case differs from those to which reference has been made is that the dislocation did not occur during the course of an acute febrile illness but during an essentially chronic malady. This malady, like its kindred diseases osteo-arthritis and chronic infective arthritis, is probably of toxic origin, though no focus of infection could be discovered whilst the patient was under our observation; this, of course, does not exclude the possibility of one having been active years before. The diagnosis of tuberculous disease is negatived by the X ray picture (Fig. 1) which revealed no evidence of erosion or destruction of bone. The hypothesis that the dislocation is due to softening of the transverse ligament by pressure from an effusion into the bursa, aptly described by Wittek as "distension-luxation," appeals to us as the most satisfactory explanation, and we find ourselves in entire agreement with him and Mr. Milne.

TREATMENT

One of us (F. A. R. S.) was asked by Dr. Stanley Barnes to treat this patient, and the problems for consideration were many. It was felt that any attempt to reduce the dislocation, either immediately by manipulation under anæsthesia or gradually by traction extension, followed in either case by fixation in plaster, would be unwise, as we thought it unlikely that the ligament would regain its normal length and sufficient strength to bear the weight of the head without some supporting apparatus. Once having applied the supporting apparatus one would hesitate to allow its being discarded for fear of a second dislocation, this time of sudden onset and with fatal medullary pressure; the apparatus would have to be worn permanently. Another point against immediate reduction was that the sudden release of pressure on the medulla might lead to a fatal medullary œdema. It was therefore decided to fix the head and neck in plaster in its flexed position, hoping that the active stage of his disease would settle down and allow of consolidation in the new position; and that eventually he would be able to manage without any form of apparatus. The plaster case was applied, and his neurological signs and symptoms rapidly disappeared. About six weeks later the plaster case was renewed as the first one had worked a little loose, and when the first case was removed it was realised that the chin was not as close to the sternum as when we first saw him. When, a further six weeks later, the second case was removed for renewal the position showed further improvement; and so much better was the position two months ago (Fig. 2) that the plaster case was replaced by a leather collar. This slow but definite improvement of position was unexpected; it will be interesting to see how much more will take place.

CONCLUSIONS

(1) Forward dislocation of the atlas on the axis is not exceptionally rare. (2) It does not necessarily prove fatal, though it is more likely to do so if the odontoid process remains intact. (3) Though usually associated with trauma (and this sometimes quite trivial) it may be essentially spontaneous, occurring during the course of: (*a*) acute rheumatic fever in any of its clinical forms; (*b*) septicæmia; and (*c*) chronic non-specific arthritis of the spine (spondylitis deformans). (4) The hypothesis that the dislocation, when spontaneous, is a "distension-luxation" is supported.

We acknowledge with thanks our indebtedness to Dr. Barnes for referring this case to us, to Mr. Milne for his valuable information, to Dr. H. Black for his excellent radiograms, and to Dr. Wilson for the past history of the case.

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Clinical and Laboratory Notes

UNUSUAL SKIN REACTION FOLLOWING NEMBUTAL ADMINISTRATION

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In an annotation on barbiturate skin lesions in The Lancet of August 12th of this year reference is made to an unusual type of skin reaction resembling an acute bedsore, which was described by Coste and Bolgert. The following case is perhaps worthy of record not only because of the severity of the skin lesions which closely resembled those described by the French authors but also because the drug responsible was nembutal, now used so extensively as a preliminary narcotic in surgical practice.

The patient, a woman of 61, was admitted to the Victoria Infirmary, Glasgow, in July of this year suffering from gall-stones. The pre-operative preparation included nembutal grs. 1½ on the night previous, and nembutal grs. 3 one hour before operation the next morning. The operation itself was uneventful, a small thickened gall-bladder with stones being removed under ether anæsthesia.

About four hours after operation, and while the patient was still in a semiconscious state, a series of large urticarial wheals appeared over the front of both thighs. Within 24 hours those on the right thigh began to coalesce and became bullæ, containing clear serous fluid. Necrosis of the dermis gradually supervened, and an extensive area corresponding to almost half of the front of the right

thigh was covered by an irregular greyish slough resembling a large bedsore. Separation of the slough was completed in a month, and subsequently the surface epithelialised rapidly, aided by the persistence of small diamond-shaped areas of uninvolved skin throughout the raw area, which corresponded to the original spaces between the bullæ.

The lesions on the left thigh remained erythematous and discrete, faded rapidly, and had disappeared by the sixth post-operative day.

In the cases cited by Coste and Bolgert the lesions occurred in areas subjected to pressure and in patients comatose for relatively long periods. In the above case, however, the question of decubitus did not arise, nor was the patient comatose or semi-comatose for longer than eight hours. It appears therefore that the lesion was attributable solely to a trophic disturbance arising from the action of the nembutal, and that no additional factor such as local pressure or sepsis was necessary.

HÆMORRHAGE FROM THE NIPPLE DUE TO A BENIGN INTRADUCTAL POLYP

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Hæmorrhage from the nipple, unless due to trauma or inflammation, is usually accounted a serious sign, and is in fact more often than not the first indication of a lesion which necessitates amputation of the breast. Nevertheless, bleeding is occasionally caused by a strictly benign neoplasm, and the case here recorded is an example. It is evident that, where the possibility of a benign tumour is suspected, the growth should be subjected to careful pathological examination before the patient is condemned to a mutilating operation.

The patient, a married woman of 32, complained of a mass in right breast which had been noticed one year previously. Two years before she had a brownish watery discharge from the nipple which had lasted one week. This recurred one year later and she then noticed the lump. In November, 1928, about six weeks before admission, she complained of "painful inflammation" of the breast and a bloody discharge from the nipple. The latter lasted ten days.

FIG. 1.—Outline drawing of the intraductal tumour.

Menstruation was regular and normal. She had one child, aged 11: no other pregnancies.

On admission (January, 1929) several small nodular masses were felt in the region of the nipple. These were excised on Jan. 16th, about seven days before the next period was due.

Pathological examination showed that the "nodules" were dilated ducts, surrounded by small groups of lymphocytes. Most of them showed nothing very remarkable. The largest duct, however, contained a pedunculated mass of tissue between which were spaces lined by columnar epithelium like that of normal ducts. Some of the trabeculæ formed finger-like projections, but most of them were merely separated by distorted ducts. The fibrous tissue was of the hyaline variety and contained few nuclei. At the distal end was a bulbous projection consisting of hyaline fibrous tissue in which was a group of branched ductules comparable to those of a premenstrual lobule. The epithelial cells lining these ductules were swollen and vacuolated. Some resembled those of the late premenstrual phase, but most would have been assigned to the menstrual period, when degeneration would have already begun. However, when these cells were compared with those of neighouring normal lobules, it was found that the latter showed a considerable degree of vacuolation, more than is usually seen seven days before a period. Unfortunately it is not known when the next period occurred; it may have come on earlier than was expected. In any case there was a surprising correspondence between the distorted lobule in the tumour and the normal breast lobules.

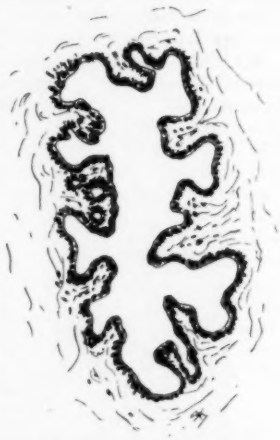

FIG. 2.—A large duct belonging to a normal breast in the interval phase with small (resting) ducts lying in a corrugation of its wall. To illustrate the first stage of polyp formation.

The structure of the tumour was that of a fibro-adenoma, distorted by pressure from the walls of the duct. The tumour was definitely benign. The patient returned for examination Sept. 22nd, 1932 (three and a half years after operation), and nothing abnormal could be found in the breast.

Fibro-adenomata commonly invaginate and encroach upon ducts, but an intraductal stalked tumour of this type is not often seen. The mechanism of its production is probably as follows: Groups of small ducts are often found close to the wall of a large main duct. When the latter is empty, its walls are folded, and sometimes the small ducts are included in a fold. During the premenstrual phase the small ducts bud and form a lobule. Normally the lobule remains in the connective tissue outside the main duct, but it may happen that the fold does not straighten out when the lobule forms, and so it may grow into the duct lumen instead of away from it. Fig. 2 explains this. The lobule, distorted by pressure and perhaps unable to obtain its full blood supply, cannot undergo its normal involution, and a vicious circle is established resulting in the formation of a tumour. Mechanical irritation of the surrounding parts and slight trauma would easily account for the bleeding.

Birmingham Hospital Saturday Fund.—At the annual meeting of this fund last week it was reported that the collection to date amounted to £130,933, an increase of £14,629 over the corresponding period of last year. Earlier payment by some firms partly accounts for the difference, but 48 more business houses have joined the fund during the year, bringing the total number of contributing firms to over 5000. There are more than 310,000 weekly contributors. During the first half of the year £60,000 was paid to the contributory association, and the proportion of the cost of treatment now paid is 68 per cent., against 63 per cent. last year. Patients treated in the fund's seven convalescent homes during the year numbered 7026, an increase of 874.

MEDICAL SOCIETIES

ROYAL SOCIETY OF MEDICINE

SECTION OF OBSTETRICS AND GYNÆCOLOGY

AT a meeting of this section on Nov. 17th, with Mr. EARDLEY HOLLAND in the chair, the subject of discussion was the investigation and treatment of the

Toxæmias of Pregnancy

Dame LOUISE MCILROY, in opening the discussion, said that our knowledge on the metabolic processes of normal pregnancy and the pathological changes occurring as a result of functional deficiencies in the maternal organism was very limited. The London committee on eclampsia found that the total mortality of the cases investigated was 22·1 per cent. The greatest number of deaths occurred in patients who had convulsions after labour was over. Toxæmia was also responsible for hæmorrhages before and after parturition in a number of cases. It was a predisposing factor in puerperal sepsis, urinary tract infections, and puerperal insanity. In the Royal Free Hospital during ten years the maternal mortality was 2·8 per thousand in 12,085 patients. Hæmorrhage and obstetric shock accounted for 31·3 per cent., sepsis for 22·8 per cent., and toxæmia and eclampsia for 20 per cent. Miss Rodway had investigated the after-results of toxæmia in 50 patients, i.e., 34 primiparæ, 16 multiparæ. Among the former there was no history of previous renal complications in 6, but 2 had chronic nephritis and 9 raised blood pressure without albuminuria, and 4 had headaches and giddiness. In the 16 multiparæ, 6 had no renal complications in previous pregnancies, 2 had albuminuria, 2 had raised blood pressure, and 2 had headaches. In 8 multiparæ there was a history of previous renal complications, 2 had chronic nephritis, 4 had raised blood pressure. Dame Louise said that the waste of fœtal life in toxæmia is almost incalculable, but is more marked in cases of renal damage. In stillbirths maternal toxæmia accounted for about 24 per cent., obstructed labour and injury at birth for 20·5 per cent., while placenta prævia, renal disease, prematurity, and breech presentations gave a figure round about 9 per cent.

Toxæmia was not a marked feature of pregnancy between the 16th and 30th weeks, as in this period the maternal and fœtal metabolic relationships seemed well balanced. In the campaign against toxæmia the important periods were the beginning and the end of pregnancy. As the speaker had pointed out in 1922, the ovum could be regarded as a temporary endocrine organ, and if it adapted itself to other endocrines, the pregnancy ran a normal course. There was great activity in the endocrines in early pregnancy, and this had a special influence on the carbohydrate and calcium metabolism.

Among the suggested ætiological factors in toxæmia were the following :—

(1) A toxic ovum associated with abnormal decidual reaction with hormones pouring into the blood stream. The chief agent of curtailment is probably the filtration action of the placenta. No investigation of a patient can be considered complete without the coöperation of the biochemist.

(2) Defective maternal excretion is due to previous renal damage, as in the case of multiparæ; it is rare in primigravidæ. Chronic intestinal stasis is important as it prevents elimination. Chief attention should be bestowed on the investigation of lowered renal function, together with faulty intestinal elimination.

(3) Deficiencies in diet are responsible factors. In later pregnancy especially the fœtus needs a considerable supply of mixed substances, such as iron, calcium, and glycogen. If these are not maintained in the mother, the fœtus drains the parent's tissues for its own requirements. Absence of sunlight and fresh air are also factors.

(4) Defective endocrine secretions are of importance as a cause of toxæmia, as shown by the improvement following the use of such glandular extracts as those of corpus luteum, thyroid, and the anterior pituitary lobe.

(5) Septic foci, as in teeth and tonsils, also play a part.

(6) Anxiety neurosis or fear—these are of the greatest importance. They are mostly found in primigravidæ, and are a prime cause of vomiting in early pregnancy. The condition is most successfully dealt with by rest and isolation, and the assurance of safety.

(7) Placenta and hepatic function. This is of chief importance in later pregnancies. If the placenta is a defective filter for toxins passing from the fœtus to the mother—possibly also vice versa—the results are serious. The detoxicating function of the liver is liable to become overworked, and so it breaks down, with accompanying degeneration of its cells. If this is not neutralised by carbohydrate diet, a fatal result may ensue. In every pregnancy there is a tendency to acidosis.

(8) In later pregnancy it is important to consider raised intra-abdominal pressure as a factor in causing toxæmia. The increasing needs of the fœtus and the greater excretion of waste products are not the only cause in cases of twins, frequently associated with toxic symptoms in the mother. Hydramnios also, by its bulk, is associated with a great rise in intra-abdominal pressure.

It was impossible to have any accurate estimation of the condition without a thorough analysis of the blood and urine at frequent intervals. Albumin in the urine might be of great value, but some of the fulminating types of eclampsia did not manifest this danger-signal until convulsions had occurred. In cases of chronic nephritis œdema somewhat depended on protein starvation. Sodium chloride retention as a cause of œdema could be counteracted by giving a salt-free diet.

Treatment of toxæmia in early pregnancy.—Colon lavage, enemata, baths, &c., should be employed to make up for defective secretion; and in addition the toxins could be diluted and largely neutralised first by fluids, and then by suitable diet. The latter should be mixed, and consist especially of salads, fresh butter, fish, and chicken. To get more rapid results, calcium, glucose, or alkalis could be given. Sunshine, natural or artificial, was a great auxiliary. Should the patient's progress be disappointing, surgery might be necessary. In early pregnancy if vomiting was severe and did not improve in three or four days abortion should be induced in case of deadly hyperemesis. This was a rare condition. It was wrong to wait long in the treatment of toxic vomiting; one should make the ovum go "while the going was good." In the Royal Free Hospital no inductions of abortion had been done for vomiting alone. Indications for this operation were pulmonary tuberculosis (23 per cent.), heart disease (17 per cent.), nephritis (8 per cent.), toxæmia with dead ovum (8 per cent.), toxæmia with living ovum (5 per cent.). Dame Louise's view was that surgical interference in early pregnancy was rarely necessary in cases of toxæmia, but in a number of cases of chronic nephritis the operation was advisable. The majority of women were anxious for their pregnancy to continue. It was the practice at her hospital to continue pregnancy in cases of renal damage, but to forbid further pregnancies.

Treatment in late pregnancy.—In later pregnancy there was less anxiety neurosis, more metabolic disturbance. The two main reasons for inducing

premature labour in these were: (1) if the mother's life was spared but the toxæmia was prolonged, the ultimate damage to liver and kidneys was serious. Prolonged toxæmia had a marked effect in the way of kidney damage. (2) Labour might have to be induced because otherwise the fœtus might die in utero. Cæsarean section seemed to be an ideal method to get out of the difficulty in cases of severe toxæmia, but most experienced obstetricians agreed that the greater the surgical interference the greater were the risks, and the higher was the maternal death-rate. She very rarely employed it for toxæmia. Dame Louise urged that in cases of toxæmia it was essential to follow the patient up, and when another pregnancy was undesirable, advice should be given as to contraceptive methods. Dr. Leonard Colebrook's contribution to THE LANCET on Sept. 30th, 1933 (p. 735), on the treatment of infective conditions of the urinary tract in the puerperium had opened an interesting new line. It would be instructive to know the results of giving a ketogenic diet to antenatal patients; but perhaps this would have a disturbing effect on the fœtus.

Myomata in pregnancy.—It was the usual custom to leave these growths alone during pregnancy, and if they complicated labour to deal with them at term. She had had encouraging results from the conservative methods employed for toxæmia.

In conclusion, the speaker deplored the loose statements sometimes made as to failure of antenatal care. Carried out by qualified practitioners, this care would certainly, in time, reduce the maternal death-rate to its possible minimum. In many cases toxæmia, though its onset could not be prevented, could be prevented from having a fatal ending. Antepartum hæmorrhage was being reduced. In five years, of 126 cases of antepartum hæmorrhage admitted to hospital, only 17 were due to toxæmia, the remainder being due to placenta prævia. She submitted that the present classification of the toxæmias of pregnancy should be revised.

HIGH BLOOD PRESSURE AND OLIGURIA

Dr. A. A. OSMAN practically confined his remarks to two clinical features—high blood pressure and oliguria, the former especially in relation to the later results of pregnancy toxæmia. He divided the high blood pressure cases into those in which it was associated with primary disease of the kidneys other than primary arterio-sclerotic disease, and those showing no evidence of past or present primary kidney disease. The outcome of several investigations showed that the question of the causal association of childbearing with chronic nephritis was still sub judice. It was interesting to attack the subject from another angle, i.e., instead of selecting cases of pregnancy toxæmia and studying their fate, to take cases of chronic nephritis in women of childbearing age and determine, from their past history, the probable cause of their chronic nephritis. Such an inquiry on his part suggested a close relation between pregnancy and nephritis; and it was while collecting figures for this purpose that he became convinced that a considerable number of the cases referred to him as those of chronic nephritis following pregnancy toxæmia were probably not suffering from that disease, but, rather, from chronic or essential hypertension, and that the kidneys were either not primarily affected, or had recovered, or were only involved secondarily. Certainly a number of people of both sexes were at the present day subjects of unusually high blood pressure, though many of them were fortunately not conscious of it and did not therefore seek, nor need, advice. Many, however, died prematurely from heart failure, apoplexy, or renal failure. There must be many cases of minor renal involvement, as shown by slight albuminuria, who yet would be liable to succumb to myocardial insufficiency or cerebral hæmorrhage. There was, however, no disturbance of nitrogen metabolism in such cases. The malignant hypertension of Fahr, characterised by necrosis and endarteritis of the arterioles, occurred in probably not more than 2 per cent. of cases of hypertension, but it might prove to be an important syndrome in connexion with pregnancy toxæmia. The actual causes of essential hypertension were unknown, but heredity and a tendency to obesity were predisposing factors. Of 42 parous women sent up as suffering from "chronic nephritis," 24 had chronic nephritis and 18 had essential hypertension, i.e., a persistently raised blood pressure and little else. In some there was a little albumin in the urine, but no increase in the blood-urea, nor any decrease in the concentrating power of the kidneys. Of the 24 chronic nephritics, 10 were attributed to pregnancy, and 7 of these had had pregnancy toxæmia, whilst in 3 this factor was unknown. Of 18 cases of chronic hypertension the probable cause was pregnancy in 16. These results, with so few figures to support them, did no more than suggest that pregnancy and the pregnancy toxæmias might prove to be important causal agents in the ætiology of chronic essential hypertension or activating factors in those predisposed.

With regard to oliguria, he had seen six cases of late pregnancy complicated by albuminuria and considerable anasarca in whom the output of urine was so low as to constitute a menace to life. The œdema was thought to be due to an abnormal affinity of the body tissues for water and to alterations in the osmotic pressure relations between blood and tissues, and not to a primary inability on the part of the kidneys to excrete water, for in such cases insufficient water was presented to the kidneys to be dealt with. Retention of products in the blood did not occur because the concentrating power of the kidney was not yet greatly affected. In chronic nephritis complicated by pregnancy the condition might be otherwise. In both cases, if oliguria was sufficiently prolonged and severe, a time might come when the volume of urine passed was sufficient to carry away the extractives, and retention products would accumulate in the blood, though the resulting uræmia was temporary. If not dealt with, however, it might well imperil life. The trouble was very liable to commence with the onset of labour and the physical exertion accompanying it. The lesson was to procure an adequate output of urine in relation to the concentrating power of the kidneys in the later stages of pregnancy and throughout labour, and for two or three days afterwards. Failure to do this was the cause, he was certain, of some of the deaths after labour in patients in whom, before labour, the symptoms were not severe enough to cause anxiety. For treating this oliguria he regarded alkalis given by the mouth as the most effective; indeed in all cases of pregnancy complicated by oliguria, these were the least harmful and the most certain of the diuretics. Their administration should be continued until a few days after labour. Some cases were doomed because in spite of an adequate output of fluid from the kidneys under the influence of alkalies, such fluid was almost pure water, the kidneys being unable to concentrate at all.

A REVIEW OF TWO THOUSAND CASES

Mr. BRIGHT BANISTER based his contribution on a consideration of 2213 cases which occurred

in the years 1908 to 1932, over the wide area covered by London, Sheffield, Manchester, Edinburgh, Glasgow, and Liverpool, as well as cases in his own practice. A tendency to undue pessimism could be modified by a realisation that most of the cases occurred in large maternity hospitals, which in themselves concentrated the tragedies occurring in a large area of practice. There were, in this large series, 1502 cases of albuminuria occurring in pregnancy and associated with toxæmic symptoms; 115 cases of acute and subacute nephritis with profound toxæmia not associated with convulsions, and 596 instances of toxæmia associated with convulsions to which the title eclampsia was applied. There were 125 fatal cases in the later months of pregnancy, or a rate of 5·6 per cent. The 92 fatal cases of eclampsia gave a mortality for that condition of 15·4 per cent. It was interesting to compare this last figure with what was found in more recent years. In the first 12 years there were 206 cases of eclampsia, with 36 deaths, i.e., 17·4 per cent.; in the second equal period there were 390 cases, with 56 deaths, or 14·3 per cent. Was this improvement likely to be progressive with the years?

He had also investigated the mortality following upon Cæsarean section as a remedy. There were 36 Cæsarean sections, 8 of which ended fatally—i.e., 17·4 per cent. In none of the institutions he referred to had Cæsarean section been done for eclampsia in seven years. 33 per cent. of the fatal cases of eclampsia followed difficult delivery or manual dilatation. Hence much manual interference was a disadvantage. In 8 of the 15 fatal cases ascribed to acute toxæmia without convulsions there was a history of prolonged administration of chloroform, and in most of them, of difficult delivery; it was therefore reasonable to stress again the danger of that anæsthetic in these cases. When chloroform was used in them, its quantity should be restricted to the least possible.

The large series also evidenced the value of antenatal care in preventing eclampsia. Until recently it was not the practice to report cases in maternity hospitals under the heads of "booked" and "emergency," but he had notes of 225 cases since this classification was made. Only 20 of them were "booked" cases, again emphasising the importance of antenatal care.

Of the 92 fatal cases of eclampsia, 33 showed symptoms for less than a week, so that those who used the term "preventable disease" in regard to eclampsia were unjustifiably harsh.

In these cases laboratory investigation should be auxiliary to clinical watchfulness; and he had been impressed with the good results which followed a purely medical line when this line was followed reasonably soon by definite improvement in the clinical condition. It was a pity to adopt an arbitrary time-limit during which such medical treatment should be continued. He would persevere with a patient in whom the blood pressure remained steady under 170 mm. systolic, if the urine output remained good and the skin acted well, even though the albumin in it did not diminish nor the œdema disappear.

It was a totally different matter when the introduction of eliminative and purely medical treatment did not improve the patient; here radical treatment had its place. Miss M. Basden had done valuable service in pointing out the value of Cæsarean section in non-improving pre-eclamptic conditions. If a woman developed an eclamptic fit after eliminative treatment had been employed for some time, provided her general condition was good, and the child had a reasonable chance of survival, Cæsarean section should be considered.

Discussion

Dr. JAMES YOUNG said he was particularly impressed by the new light which Dr. Osman had thrown on some of the obscure clinical problems; what he had said enabled some matters to be approached from a different standpoint. In Edinburgh it was computed that 6 per cent. of the ordinary unselected population had toxæmia in the later months of pregnancy; the incidence of severe cases was also high there. Moreover, the mortality from toxæmia was twice as high in Scotland than in the South of England. He felt that if a woman had reached the eighth month and had well-established toxæmia, the sooner that pregnancy was terminated the better for her. Also, the longer the child was left in the uterus, the greater was the chance that it would be damaged by the toxæmia. To continue the pregnancy to term in such a case was to condemn the woman to shattered health. Toxæmia could not be treated adequately and efficiently in the ordinary home; these patients should be taken somewhere to receive constant observation and care.

Dr. G. W. THEOBALD, who said he had seen cases of pregnancy in all parts of the world, claimed that the toxæmia under discussion was a disease of environment, especially of internal environment. He did not think there was such a specific condition as the toxæmia of pregnancy. Most unmarried women had never had their urine tested. In the treatment of the toxæmia which had been described he stressed the importance of iodine, calcium, vitamins, and iron.

Prof. JOHN SHAW DUNN said that recently he had had the opportunity of examining kidneys from fatal cases of eclampsia, with Dr. Dugald Baird, in Glasgow, and lesions were found similar to those which Fahr and Bell described, in every one of those cases. The condition affected the glomeruli, in minor degree but on a wide scale. He regarded that as the lesion of the albuminuria of pregnancy. It was not usual to find much degenerative change in the tubules in these cases, a fact contrary to common teaching. There was, indeed, little to suggest the action of any toxin with lethal effect on protoplasm.

Dr. G. F. GIBBERD said that the cause of eclampsia was not yet known; but the hypothesis which had inspired him more than anything else was that advanced by Dr. James Young in 1914. He possessed the kidneys of a woman whom he had watched through three pregnancies, and now he could not help feeling it was a mistake to have allowed her to have three pregnancies. The milder the condition, the more important was it to induce labour.

Dr. HORACE EVANS said that at London Hospital recently special study had been given to cases of acute nephritis with high blood pressure of sudden onset, with fits, coma, and blindness, a condition closely resembled eclampsia. The renal function was practically always normal. The patients responded well to treatment by morphia, venesection, and lumbar puncture. He asked whether changes in the retina had been noted by members in eclampsia, as some declared that there was a spasm of the retinal arteries and if that were so, there might equally be a spasm of other vessels.

The CHAIRMAN stressed the importance of taking a good deal of care to obtain a complete medical history in this work. He had had cases in which previous renal trouble was revealed and yet it had escaped the purview of resident medical officers

and students. In one or two cases recently questioning failed to disclose previous scarlet fever, diphtheria, or other disease, but on inquiry from the family doctor such a history was at once forthcoming. The frequency of such an earlier history had an important bearing on the incidence of chronic nephritis in eclampsia.

Mr. V. B. GREEN-ARMYTAGE hoped it would not go out into the world that a member of the section had declared that there was no such specific condition as the toxæmia of pregnancy. In the East, at least 15 per cent. of all primiparæ suffered from some form of toxæmia. His views on this matter were those of Dr. James Young.

Reply

Dame LOUISE MCILROY, in reply, agreed with the remarks as to the danger of chloroform administration in these cases, especially for prolonged procedures. Again she stressed the importance of counteracting the anxiety of primiparæ. In gleaning histories, diphtheria was of the first importance, as it probably left some permanent kidney damage.

Dr. OSMAN said that family histories showed that in some kidney disease was a family complaint. Such anæsthetics as chloroform should not be administered if it could be avoided. Nephritis was common among unmarried women, but less common than among the married who had borne children.

SECTION OF RADIOLOGY

AT a meeting of this section held on Nov. 17th, the chair was taken by Dr. R. S. PATERSON, the president, when a discussion on the importance of

Posture in Radio-Diagnosis

was opened by Dr. E. W. TWINING, who selected the skull to illustrate his remarks.

THE SKULL

Excluding pituitary growths, he said, the meningiomas were the most likely tumours to show direct evidence of their presence. They caused erosion, hyperostosis, and hyperæmia of the overlying bone, and the diploic veins could be seen enlarged, with parallel sides. Stereoscopic films were invaluable for showing these veins and examining the small areas of bony change. Olfactory groove tumours were difficult to diagnose radiologically, and positions might have to be designed to show them. Absence of the clinoid process and the depression of the roof of the sphenoidal sinus might indicate a large growth. Rarefaction might also be seen, but might be misleading in localisation. The petrous bone was well shown by Stenvers's position, but this view superimposed the anterior and posterior surfaces. Projection of the petrous bones into the orbit allowed comparison of their density but did not show the back. Petrous bones varied very much; the internal auditory meatus could be found by tilting the head until the meatus appeared as a bright white dot through the external meatus. The superimposition method, however, was greatly surpassed by fronto-occipital projection at an angle of 30°, which grazed the back of the petrous. This method was also useful for occipital fractures and small areas of calcification. It was known in America as Towne's method.

Posture was all-important in ventriculography, e.g., in hydrocephalus. The third ventricle pressed on the posterior clinoid processes and pituitary fossa. The lesion could not always be distinguished from sella destruction due to pituitary adenoma. The site of obstruction was important from the point of view of treatment. Patency of the foramen of Monro could be shown radiologically without difficulty. A dilated third ventricle might be seen in the antero-posterior view or even better in vertical projection; lateral view might show the whole area clearly, but to make sure of filling the ventricle the patient should be placed as for a vertical view, though a lateral view was actually taken. If one film were taken with the head rotated towards the plate and another with the head rotated away—the shadow-shift method—the two ventricles could be distinguished. Intracranial aneurysm of the internal carotid artery might be shown by thorotrast injection of the artery.

THE CHEST

Dr. J. V. SPARKS discussed the chest, where, he said, posture was of primary importance in routine examinations because from these views the radiologist decided whether further investigation would be useful or not. Various routines were adopted by different observers. He himself employed the prone posture tilted at about 10° towards the apices, the forehead supported on a sandbag and the shoulders pressed well downwards and forwards with the elbows flexed. The first variation was the erect position, the patient sitting and clasping the cassette tilted a little towards his apices. From these two views the radiologist could decide whether to take oblique, lateral, or other views. If the patient was very ill, fluid could often be shown by turning him on to his side and taking a picture with the rays parallel with the floor. Secondarily, the patient could be rotated as required to show special areas for localisation.

The presence of fluid in association with air naturally illustrated best the importance of posture; the patient could be tilted to any angle, or inverted. Basal abnormalities were likely to be overlooked if the patient were not examined by Rowden's method, which brought into view the lung behind and in front of the dome of the diaphragm.

THE ABDOMEN

Dr. G. B. BUSH dealt with the abdomen. Two factors, he said, rendered posture of vital importance in abdominal investigations: (1) the change of position and shape with change of posture in man and in the course of man's evolution to the upright position; and (2) the fact that opaque fluids had to be used for examination, and these fluids changed with posture. A simple motor-driven tilting couch was a valuable piece of equipment. Stricture of the œsophagus was better shown in a lateral recumbent view. The cardio-œsophageal junction was difficult to study satisfactorily without changes of posture. Filling defects might not be noticed in the upright position, and supine or sloping positions were of great value for atonic stomachs. The inclined position was also most useful for the duodenal bulb. In small intestine obstruction fluid levels were of great diagnostic importance. Posture was important in determining mobility in diverticulitis and fixation. Visceroptosis was not in itself a cause of symptoms but rather one link in a chain of cause and effect. Gall-stones might be more clearly demonstrated in the upright than in the horizontal position; stones tended to fall to the bottom of the gall-bladder. Minute calculi and bile sand might be shown in this way.

DISCUSSION

Dr. GRAHAM HODGSON showed slides illustrating the value of posture in facial fractures and in erosion of the optic foramen by intracranial growth.

Dr. G. E. VILVANDRÉ said that great reliance could not be placed on diploic veins; their enlargement did not necessarily mean cerebral tumour. Meningeal

plaques were not uncommon and did not indicate meningioma; it was uncommon to get direct evidence of meningioma. The value of radioscopy lay rather in the indirect evidence of mottling, opening of sutures, or distortion of the pituitary fossa. Too much stress had been laid, he thought, on the direct evidence in cranial tumours.

Dr. C. G. TEALL said that radiology had made enormous strides in cranial work. Meningeal veins could be enlarged without indicating meningioma, but not in the way shown by Dr. Twining. A reversed Towne position had proved valuable: the patient lay on the forehead and the tube was tilted upwards from the feet. This position was also useful for showing the pituitary fossa. Stereoscopy was open to many fallacies when used for ordinary localisations. Ventriculography represented a great advance. Further research in the radiography of the skull was of great importance.

Dr. COURTNEY GAGE observed that when there seemed to be a defect in the outer or inner table it was useful to take any of the methods suitable for a duodenal cap and to displace the film slightly before each exposure. Expiration was valuable in studying the cardiac end of the stomach; the meal went up into it in expiration in the dorsal supine position. Another useful method was examination by the opaque enema in the erect position.

Dr. LEO ROWDEN recalled that years ago he had been much laughed at for saying that the preliminary examination of the stomach always took him an hour and a quarter, but he thought now that the laugh was on his side.

Dr. VILVANDRÉ pointed out the value of the pineal, displacements of which could be seen in patients over 40 on account of its calcification.

In reply, Dr. TWINING agreed that diploic veins might be enlarged in other conditions besides meningioma, but said he had been describing a particular type. A false localising sign might be due to vascular pitting far away from the tumour. Calcified plaques were often found, but the "normal" ones were usually bilateral. If an enostosis in the skull was found it should be investigated, even if it proved in the end not to be associated with meningioma.

THE ANNUAL DINNER OF THE ROYAL SOCIETY OF MEDICINE

THE annual dinner of this society was held on Nov. 16th, the chair being taken by the president, Mr. V. WARREN LOW. After the loyal toasts had been honoured, the EARL OF ATHLONE, proposing

THE HEALTH OF THE ROYAL SOCIETY OF MEDICINE

said he was glad to find that many of the Fellows were graduates of the university of which he was chancellor. The society owed its inception to individual initiative, and its originators had settled their plan at a meeting in a tavern. From a tavern to a charter had taken less than thirty years, and that period had also seen a migration from Gray's Inn to Lincoln's Inn-fields. After two further changes of habitat the society found itself firmly settled in the west in its own home. Its apparent restlessness had been due to growth and ever-increasing activity. The medical library, second to none, attracted, on an average, a hundred readers a day. An endowment of the library would be of the greatest assistance. He heard, with some compassion, that an enlargement of premises would soon be necessary, but he did not doubt that the needed funds would be forthcoming. He hoped that individual initiative would continue to exercise the power it had exercised in the past, as only by individual initiative was anything done.

The PRESIDENT, in reply, said that fortunately Lord Athlone was a soldier, for it required some courage nowadays to accept an invitation to a banquet. The modern guest, once seated, produced his calorie chart and vitamin table and hastily calculated how many hours of squash racquets and how many baths would be required to counteract the menu. It must be very disappointing to many to learn that brain work made no demands on the energy requirements of the body. Biochemists might not regard after-dinner speaking as brain work, but the accompanying emotional perturbation might receive some biochemical recognition.

The medical profession was always ready to adapt itself to the whims of the public. A short while ago the public had announced that it would be thin; immediately the medical correspondents of the lay press had leapt to the demand and produced a flood of diet forms and dietetic information. Similarly a short time ago the public had demanded to be wrenched back to health, and forthwith there had arisen a body of athletic medical men willing to twist any ailment. To put the osteopath on a level with the doctor would be unfair to both; the former would lose a grievance which gave him much satisfaction and the latter would lose the singularity which was perhaps his chief charm.

There were now 5000 Fellows and Members of the society, an increase of nearly 200 over last year; and 24 sections. The library was perhaps the chief attainment; it was the largest medical library in the world, containing 170,000 volumes and taking a thousand periodicals from all over the world. It was open five nights a week until 10 o'clock, and was only closed on public holidays. In conjunction with such bodies as the post-graduate schools the society would find increased scope for usefulness. Its motto meant that for such a society mere existence was not enough; it must live a vigorous life.

Prof. WILLIAM BULLOCH, in proposing the health of

THE GUESTS

said that Lord Athlone had long been associated with medicine, and so had many of his ancestors. Prof. Bulloch regretted, as hon. librarian of the society, that he had not had time to read all the works Sir Ernest Benn had published—or indeed any of them. He agreed that individualism was the great thing in this world. Most of the other guests, he added, were presidents of kindred societies. Unfortunately the president of the Royal College of Physicians was not present as, after attending everybody in the country, he was himself ill with a slight cold.

Sir ERNEST BENN, in reply, said that to him a librarian was a creature engaged in the nefarious business of encouraging people to read books without paying for them. The institution represented by Lord Athlone and Lord Macmillan had decided in the year 1889 that he was not fit to matriculate, and thus had launched him on a career without a suspicion or taint of education about him—for which he had been grateful ever since. Scientific people—whether in the interests of economy or not, it was not for him to say—did not advertise but were the greatest living experts in extolling each other's qualities; no layman could hope to compete. His self-imposed mission was to attempt to save humankind from a superabundance of good works. He noted with pleasure that at its inception the society had killed 17 other societies; he would be glad to send a list of 1700 more societies which had since that date become ripe for dissolution.

Commercial people were subjected to a continual process of spiritual purification owing to the need to speak humbly to their customers and to tell the truth about their goods; they were on the high moral plane of payment by results. It was a constant amazement to him that medical men were able to maintain a modicum of spiritual health under the different conditions in which they worked. The cultivation of the mind was at least as important to man's well-being as the care of some of those less respectable organs which were the charge of the doctor. The world was in a mess from chasing the notion that it could make a living by politics, that rewards could be won by votes instead of work, and that authority could be separated from responsibility. Governments were telling millions of people: "You have the baby; we do the rest." How much sound, good, God-made science was prostituted by that degrading idea! What was the doctor's share in this degradation? He would not go so far as to say that we needed "fewer clinics, more cynics." In the words of a socialist mayor, however, it was "very 'ard to steer a course along the narrer path between right and wrong." A committee might usefully inquire whether character, wit, and spirit could exist in a world from which all trouble was removed at other people's expense

MANCHESTER MEDICAL SOCIETY

AT a recent meeting of this society Dr. C. PAGET LAPAGE delivered his presidential address on

Disposition and Disease

Disposition, he said, is mainly built up from endowment, although environmental influences may have some effect. Endowment acts through (1) Physical configuration and endocrine gland groupings. (2) Metabolic stability: fat, sugar, and protein metabolism. (3) Nervous influences which are (*a*) sensibility of the cerebro-spinal nervous system; (*b*) stability and orientation of the autonomic nervous system. Environment acts through (1) Trauma, physical and psychical. (2) Overloading of metabolism. (3) Overwork of the cerebro-spinal and autonomic nervous systems. (4) Overwork of the endocrine glands. (5) Inflammations and infections. (6) Ageing and attritional influences.

Physical configuration may give some evidence of the reaction which the body is likely to show to extraneous influences—physical, mental, and metabolic. Thus the pyknic or circular type of individual may because of his physical form be recognised as liable to certain diseases, the schizoid or angular type to others. It is, however, by no means easy to correlate physical configuration with disease, except perhaps in relation to mental disorders. It must also be remembered that the endocrine gland influences may cause dysplasic developments of body configuration, abnormalities which are not truly dispositional. On the other hand, disposition may depend on an hereditary tendency to grouping of these glands and domination of certain groups may determine the trend of metabolic influences and the internal functions of the body.

Metabolic influences are chiefly in the form of toxic effects through abnormally constituted body fluids which irritate or undernourish the nervous tissues. For instance, fatty acids may irritate nervous tissues, and lack of calcium be related to spasmophilia. Faults in metabolism of carbohydrates, fat, or protein may occur, the latter in relation to allergy, the former in relation to those individuals who use up sugar rapidly. Toxic disturbances of metabolic origin are often affected by infections, especially by a chronic septic focus. Such influences may affect the cerebro-spinal or the autonomic nervous system. If the higher nervous system is affected conditions arise like hysteria, tic, and other disorders which are usually called psychoneuroses, but in children are perhaps better called habits. The autonomic nervous system, said Dr. Lapage, is closely connected with disturbances like allergy. In allergy there are conditions such as spasm of tubes or blood-vessels, secretion of mucus, skin eruption, sudden catarrhal and other disturbances, which show a tendency to be familial and dispositional. Sensitisation may take place and be a marked feature, but the dispositional element is there beforehand. The autonomic system may also show an orientation towards either sympathicotonia or parasympathicotonia.

Dr. Lapage finds a dispositional tendency to groupings of endocrine glands in parent and offspring which may have an effect on illnesses and thus lead to similarities in parent and offspring. Traumatic influences are important in the causation of nervous conditions; not direct trauma but the cumulative effect of stress and strain of modern life on the senses, the autonomic nervous system, and on metabolism. These effects are severe, especially in predisposed individuals. Conflicts in the cerebral cortex between excitation and inhibition and disturbances of radiation may lead to functional disorder. Traumatic factors may also by their effect on the autonomic nervous system lead to allergic conditions; children are liable to such allergic habits, and the more often the habit is repeated the more difficult it becomes to break. Overloaded metabolism acts as a traumatic agent, and can be a very potent factor in determining nervous diseases.

Infection, unlike allergy, is not primarily dispositional but fortuitous. It attacks any individual, and though it may produce different reactions in different constitutions in the main its effects are the same. It is difficult to prove any decided correlation between parasitic diseases and physical configuration, but certain infections seem to attack certain physical types with greater frequency. For instance, tuberculosis often infects the asthenic type. Attritional influences are chiefly those of wear and tear and age. Just as growth and development are much influenced by the endocrine glands, so attritional effects are due to disorders or dysfunction of those glands.

The attack on disease should not be limited to public health measures to prevent infection, but should include efforts to relieve stress and strain, and thus lessen traumatic influences. Full attention is already being given to infection; the same attention should be given to the relief of the cumulative traumatic influences which are being steadily thrown on the nervous system.

FEDERATION OF THE HEALTH RESORTS OF FRANCE. The following medical tours will take place in the South of France under the management of the Federation during the Christmas Holidays. From Dec. 26th to Jan. 2nd there will be a tour on the Riviera visiting Nice, Menton, Monaco, Monte-Carlo, Beaulieu, Villefranche, Vence, Grasse, Cannes, Juan-les-Pins, Antibes. From Dec. 31st to Jan. 6th a tour starting from Cannes will visit Juan-les-Pins, Antibes, St. Raphael, Agay, Hyères, Sanary, Bandol, Cassis, Aix-en-Provence, Marseilles. The tours will be under the scientific direction of Profs. Imbert and Olmer, of the Faculty of Medicine of Marseilles, and Prof. Balthazard, Doyen of the Faculty of Medicine of Paris, and other well-known doctors. Full particulars of the cost of these tours may be had from The Federation, Tavistock House (North), Tavistock-square, W.C.1.

REVIEWS AND NOTICES OF BOOKS

Maternal Mortality and Morbidity

A Study of their Problems. By J. M. MUNRO KERR, M.D., F.R.F.P.S. (Glasg.), Regius Professor of Midwifery, University of Glasgow. Edinburgh: E. and S. Livingstone. 1933. Pp. 400. 25*s*.

Fetal Newborn and Maternal Morbidity and Mortality

Report of White House Conference. London: D. Appleton and Co. 1933. Pp. 485. 12*s*. 6*d*.

THESE two contributions to the solution of a difficult problem are of particular interest to obstetricians at the present moment, as they both go deeper into the details of midwifery practice and management than did the Report of the Departmental Committee on Maternal Mortality, and generally approach the question from a different angle. Prof. Munro Kerr's book is fairly evenly divided between strictly obstetrical matters and a study of the maternity services at present provided by the public health authorities, voluntary hospitals, the Queen's Institute of District Nurses and other agencies, and by medical practitioners and midwives in private practice, thus leading up to his own scheme for a national maternity service, with the development of which our readers are familiar.[1] He strongly advocates the employment of midwives by the local authorities, chiefly on the ground that in this way only can their practice be fully linked up with the public clinics, hospitals, and other services, and the conditions of their work made attractive to the better trained women. He also endeavours to indicate how the work of the practitioner can be brought into the service of the public antenatal clinics and continued into domiciliary practice. Lack of properly coördinated effort is regarded as the chief fault of the present system and thus leads Prof. Munro Kerr to cast the public health authorities for the leading part in directing his scheme, because they seem in the best position to succeed as coördinating agents. Neither government departments nor local councils have, however, shown themselves amenable to influence by such consultative boards or advisory committees as he envisages, and many will question the possibility of any effective, much less executive, power being entrusted to them.

The work issued by a subcommittee of the White House Conference on Child Health and Protection consists of 22 reports, analysing and discussing the factors at the root of maternal, fœtal and neonatal morbidity and mortality. No attempt is made to formulate recommendations for better arrangements for attendance on childbearing women, the work being concerned solely with those improvements in obstetric practice and hygiene that may serve to lessen death and disablement among mothers and infants. The reports seem to be made by individual members of the 30 or more persons composing the subcommittee, the chairman being responsible for the summary and recommendations which form the opening section. Much of the information and statistics appear to have been collected by means of questionnaires to hospitals and other bodies in a position to answer them.

A comparison of these two publications indicates a general agreement on the main obstetric factors in the causation of maternal mortality. They concur in stressing the need for a reduction in the amount of interference in labour and on the importance of the effort to maintain normal function. An increasing resort to artificial delivery, even in hospital practice, seems to be more marked in America than in this country, the average rate of forceps deliveries in 121,000 cases being 17·4 per cent. in 207 general hospitals with maternity departments and 20·4 per cent. in 25,000 deliveries in 16 maternity hospitals. The reasons given for interference are much the same as those put forward by Prof. Munro Kerr—viz., the demands of the women for anæsthesia and a short labour—but another explanation which is not represented in the British book, both for the use of forceps and for the ever-increasing proportion of Cæsarean sections, is an exaggerated idea of the value of the infant's life and of the value of operative delivery in conserving this life. The second half of this statement gives the clue to the argument, which is that fœtal distress is often made the indication for these operations but that the evidence of the heart sounds is unreliable and that the results obtained from interference are insufficient to justify it. The conclusion reached by the American observers is that "What is needed is a return to the idea that parturition is essentially a physiologic phenomenon, which should be interfered with only for good reason." Prof. Munro Kerr brings forward evidence casting grave doubt on the conclusion of the Departmental Committee that the mortality-rate was not materially affected by the widespread resort to provoked abortion, and his view receives strong confirmation from the American report.

A wealth of valuable matter is contained in both of these books. The British one will naturally make the stronger appeal to readers in this country because of its careful analysis of the conditions here, and of the suggestion it embodies for a national maternity service. It will take its place as a standard work of reference, from the obstetrical as well as the sociological aspect, for all studying the problem it seeks to solve.

[1] See THE LANCET, 1931, ii., 367.

The Technic of Local Anæsthesia

Fifth edition. By ARTHUR E. HERTZLER, Professor of Surgery, University of Kansas; Surgeon to the Halstead Hospital, Halstead. London: Henry Kimpton. 1933. Pp. 292. 25*s*.

THE popularity of this book is due to the clearness and precision with which instructions for local anæsthetic administration are given and to the elimination of unnecessary matter. Though the author is an enthusiast his zeal for local anæsthesia does not run away with his judgment. He regards, for instance, paravertebral anæsthesia below the cervical region as a "stunt" and would limit very strictly the employment of trans-sacral anæsthesia. He sums up well, in nearly every instance, just how much can be accomplished by local methods, and he does not shirk difficulties and drawbacks. This is one of the greatest merits of the book. He says, for instance, on page 166, "generally speaking, gall-bladder work is unsatisfactory" under local anæsthesia and he recommends ether. This admission rather belies the assertion (p. 8) that any operation can be done under local anæsthesia. In our experience it is almost impossible to carry out painlessly a number of other procedures.

In the section on injection of the Gasserian ganglion the legend to Fig. 34 appears to be wrong; the thumb

is certainly not over the parietal eminence. We do not agree with the statement that too many accidents have followed injection of the ganglion with alcohol to make this a method of general application. In skilled hands accidents are very rare.

Modern Aspects of Gastro-enterology

By M. A. ARAFA, M.R.C.P. Lond., Medical Assistant to Guy's Hospital, London; Medical Tutor to the Egyptian University. London: Baillière, Tindall and Cox. 1933. Pp. 374. 27*s.* 6*d.*

DURING a three years' leave of absence from Egypt, Dr. A. M. Arafa has made a close study of gastro-enterology in various countries, particularly England, Germany, and Austria. The results of his observations are recorded in a well-written volume which provides in particular a lucid and convincing exposition of the subject based on the views of Dr. A. F. Hurst and his collaborators. Dr. Hurst himself contributes a foreword to the book. The illustrations are numerous and beautiful, most of them being radiograms taken by Dr. P. J. Briggs. It is perhaps regrettable that whilst the author has enlarged his work to include the ulcerations of the colon and has even added some description of insulin, the volume does not give any complete account of diseases below the pylorus. On the other hand the descriptions of peptic ulcer, the critical review of the various applications of gastric analysis, and the discussion of the significance of achlorhydria and the relative importance of gastritis provide evidence of the industry of the author, and give his work distinction.

Œuvres de Pasteur

Edited by PASTEUR VALLERY-RADOT. Vol. VI. Paris: Masson et Cie. 1933. Pp. 906. Fr.160.

THE last instalment of this monumental commemoration of Pasteur brings us at last to those parts of his work which are of immediate medical interest, at a time when the death of Roux reminds us that the last living link with the great days of 1877 to 1885 is gone. The volume begins with the discussions at the Academy of Medicine on fermentations and putrefactions, passes on to the ammoniacal decomposition of urine, puerperal fever, boils and osteomyelitis, anthrax, fowl cholera, swine erysipelas, and finally rabies. It gives with careful detail all the papers, discussions, and reports in which Pasteur finally convinced his public that microbes really do matter, and will be of much interest to those concerned with the growth of scientific knowledge.

The Joy of Living: an Autobiography

By Dr. FRANKLIN H. MARTIN. Garden City, New York: Doubleday, Doran and Co. 1933. Vol. I., pp. 491. Vol. II., pp. 526. Fully illustrated. $7.

Dr. Franklin Martin has kept a personal diary throughout his life which has enabled him to compile a stimulating record not only of his own doings but of the varied events which have gone on around him since he was old enough to take notice—this is literally so, for the story begins in the cradle. The work is divided into two volumes, the first containing personal and professional reminiscences, and the second an account of the author's relations with the activities brought about by the European war.

We begin with a charmingly drawn picture of the life of a settler in a western State of U.S.A. 90 years ago, at which date Franklin Martin's grandparents, the male from Canada, the female from Pennsylvania, made a nearly simultaneous trek "through the squalid village of Chicago" to the lake district of Wisconsin. A detailed description is given of the childhood of the boy who was forced to assist by his own work in keeping himself before any definite scheme for his education had been evolved. The work was hard but evidently performed with real joy—the joy in personal performance. Then follows the scheme of life as a medical student in Chicago, and then a detailed description of the development of a successful professional career. From here onward the progress of Chicago in every direction, since the famous fire 40 years ago, forms the setting for the narrative, and Martin's summaries of the achievements of medical science during that period gain by the simplicity of the language employed. The latter part of the first volume is much occupied with the story of the American College of Surgeons, in the institution of which just before the war Martin played so prominent a part, finally becoming in 1928 president of the College. We have here also a minute account of the organisation and administration of *Surgery, Gynecology, and Obstetrics*, the paper which first saw the light in 1905, with Martin as managing editor, in collaboration with the leading surgeons of the country.

The second volume is concerned with the American participation in the European war. This volume is introduced to the reader by Mr. Newton D. Barker, former secretary of war in U.S.A., and Mr. Daniel Willard, former chairman of the Advisory Commission to the Council of National Defence. The whole volume is based on Martin's regular presence at meetings of this Commission, of the Munitions Board, the War Industries Board, and the General Medical Board, enabling a personal diary to be reinforced throughout with the official minutes of meetings at committees and subcommittees, and at full sessions of the various bodies. This volume, though written, as the author says in his preface, with the intent to interest the general public, contains much valuable medical information, showing the rapid development during the war of the American medical organisation. Thus we learn that in November of 1917 the medical officers of the army numbered 440 and those of the navy 329; at the armistice there were 30,591 medical officers in the army and 2570 in the navy. The way in which this remarkable expansion was effected, the difficulties faced, and the methods adopted are set out in full.

The whole book is written with a sort of joyous naïveté. Nor does the fact that Dr. Franklin Martin's autobiography runs to a thousand pages mean in the least that we have here an expression of excessive egotism. By far the larger part of the book is occupied with detailed descriptions of the work of others in which he collaborated, and on which therefore he could register personal impressions; and to those others the warmest recognition of their services is always given. The autobiographical matter runs as a thread through pages in which we get biographies of predecessors or contemporaries, summaries of literary departures and educational developments, notes on the ethics of journalism, pictures of the war as seen at the fronts, and descriptions of the national issues created in the U.S.A. by its outbreak and conduct—all this and much else. A vivid and informing work, which lives up to its title.

THE LANCET

LONDON: SATURDAY, NOVEMBER 25, 1933

THE COST OF AN ADEQUATE DIET

THE British Medical Association renders an appropriate and timely service by publishing this week the report of its committee on nutrition. The Committee[1] was appointed last April "to determine the minimum weekly expenditure on foodstuffs which must be incurred by families of varying size if health and working capacity are to be maintained." For some seven months therefore its members have been considering, indirectly, one of the most important aspects of the problem of unemployment relief, and their report is as lucid and illuminating as can be expected in the present state of knowledge.

It has not been possible within this time to reconsider the fundamental principles on which nutritional needs are generally estimated, and it is open to bold critics to say that these principles are unsound. If the classical physiological observations stand, however, the rest of the Committee's findings must be accepted in substance. They are based on an assumption that the adult male requires on the average 3400 calories a day to keep body and soul in good working order; and this, it is true, exceeds most previous estimates by 400. On the other hand the report offers good reasons for the increase, and in practice the extra amount is made up from cheap carbohydrates which add little to the cost of the diet. In calculating the proportionate requirements of women and children the Committee adopts the scale laid down by E. P. CATHCART and A. M. T. MURRAY[2] which enables one to express a family's needs in "man-values"; for example, a husband, wife, and four children have the same calorie needs as 4·63 adult men. Calories, however, are not enough, even when seasoned with vitamins and minerals, and the Committee draws its conclusions from specimen diets which could in fact be tolerated by the consumers and have the necessary flavour of variety. Again, for children it rightly insists on a disproportionate supply of first-class protein and bases its estimates on an item of one pint of milk per day for every child from one to six years of age.

The specimen diets have been prepared as economically as possible, and the approximate cost of each is given. Prices, however, vary from time to time and place to place, and the Committee names no one sum that may be supposed to cover the weekly needs of the adult male. Instead it offers two scales of cost—one based on the prices ruling in a single locality (Stockton-on-Tees) during twelve months, and one (the B.M.A. scale) based on the prices current in a number of areas throughout the country during two weeks of last summer. The Stockton scale is the lower because Stockton—hard hit by the depression—is a very cheap market; but the difference is more apparent than real, since it is mainly accounted for by the purchase of flour instead of bakers' bread. In Northern towns the bread is made at home and the cost is thereby reduced; it should be noted, however, that the Stockton figures make no allowance for fuel. The accompanying Table of Family Coefficients, which really contains the main conclusions of the report, gives both scales, and it will be seen that the Committee holds that the lowest expenditure which will support both health and working capacity in the adult male is 5*s.* a week in Stockton and 5*s.* 11*d.* in the other areas studied. This is in line with previous estimates,[2] but the Table brings out even more emphatically the large needs of children. It has proved impossible even at Stockton prices to devise an adequate diet for a child at less than 2*s.* 6*d.* a week and the cost rises rapidly with age until the boy of fourteen reaches the adult level.

	Man-value calorie Coefficients.	Cost per head per week (to nearest 1*d.*) B.M.A. scale.	Stockton scale.
		s. *d.*	*s.* *d.*
Adult male	1·00	5 11	5 0
Boy over 14 years	1·00	5 11	5 0
Adult female	0·83	4 11	4 2
Girl over 14 years	0·83	4 11	4 2
Child 12 and under 14 years	0·90	5 4	4 6
„ 10 „ 12 „	0·80	4 9	4 0
„ 8 „ 10 „	0·70	4 2	3 7
„ 6 „ 8 „	0·60	3 7	3 0
„ 3 „ 6 „	0·50	3 5	3 0
„ 2 „ 3 „	0·40	3 1	2 10
„ 1 „ 2 „	0·30	2 8	2 6

SUPRACONDYLAR FRACTURE OF THE HUMERUS

A MEDICAL student asked to name the complications of the common supracondylar fracture of the lower end of the humerus in children would be expected to know that Volkmann's ischæmic paralysis may be caused by interference with the vascular supply during the early stages of treatment, and that early resort to passive movement and massage is liable to lead to myositis ossificans. These sequelæ are alarming enough to deserve all the attention they have received; but there are other imperfections in the end-result not so generally known which may follow even careful reduction and meticulous after-treatment. Of these the two most important are an ugly varus deformity recognised by a loss of the "carrying angle" and permanent loss of the full range of flexion and extension at the elbow-joint.

[1] The members are Dr. E. K. Le Fleming, chairman of the B.M.A. Representative Body (chairman); Dr. G. C. M'Gonigle, M.O.H. for Stockton-on-Tees (hon. secretary); Sir Henry Brackenbury, chairman of council, B.M.A.; Mr. N. Bishop Harman (treasurer, B.M.A.); Dr. G. F. Buchan, M.O.H. for Willesden; Dr. S. J. Cowell, professor of dietetics in the University of London; Dr. G. E. Friend, medical officer, Christ's Hospital, Horsham; Dr. Robert Hutchison, physician to the London Hospital; and Mr. V. H. Mottram, professor of physiology in the University of London. The committee has also had advice from Prof. A. L. Bowley and Dr. G. P. Crowden. The Report, which is published in the supplement to this week's *British Medical Journal*, and is obtainable separately from the British Medical Association, Tavistock-square, London, W.C.1, price 6*d.* post free.

[2] See THE LANCET, 1933, i., 597.

Dr. WÄINÖ AVELLAN,[1] of Helsinki, has lately analysed the records of 41 fractures of the lower end of the humerus in children, including 31 supracondylar fractures—all of them under his own care. Although they include examples of very severe injuries, none was followed by what would usually be called a really bad functional or anatomical result. AVELLAN, however, is dissatisfied first because of the high proportion of cases (16 out of 31) resulting in varus deformity, and secondly because there was a very definite limitation of flexion in 90 per cent. What has most impressed him in his experience is the importance of treating supracondylar fractures of the humerus with the forearm in *pronation*. Nearly all his cases were treated, after reduction, in a plaster splint, with the elbow at an angle of 90° and with the forearm in complete supination. Anyone who likes to experiment in the dissecting-room on the effect of different degrees of pronation and supination on the tension of the pronator teres can prove to his own satisfaction that the effect of full supination, with a fracture of the lower end of the humerus, will be to angulate the fracture outwards through the pull of the lower attachment of the pronator teres to the radius. AVELLAN quite definitely attributes his bad results to his failure to recognise the importance of the position of pronation, as originally emphasised in the writings of LORENZ BÖHLER.[2] Unfortunately the varus deformity cannot be recognised, either clinically or by radiography, until the elbow is extended—a position in which it is unlikely to be examined for several weeks after reduction. The final radiogram, taken after the fracture is firmly united, will show the loss of the carrying-angle if this is looked for, but reveals no very obvious deformity of the humerus; the callus thrown out masks the slight bend which is all that might be seen.

The second criticism of his own methods which AVELLAN makes is that the degree of flexion during reduction and treatment was insufficient. English surgeons, notably Sir ROBERT JONES, have advocated a position of acute flexion for this fracture, partly because of its success in retaining the bone-ends in the corrected position, and partly because the pressure of the soft parts on the front of the humerus leaves little room for the development of excessive callus. As ROBERT JONES put it, "No obstructive callus can form, because there is no room for it."[3] In view of the supposed danger of producing ischæmic paralysis there has been a tendency of late towards abandonment of this position of acute flexion for one of right-angled flexion, and it is therefore well to emphasise the fact that the position advocated by ROBERT JONES was not one of *forced* flexion. His instructions are that the elbow should be flexed "until the hand touches the neck"—not, be it noted, the shoulder. He specifically stated that the forearm should not be bandaged to the arm, or the arm to the body. In practice it will be found impossible to maintain a position either of forced flexion or of forced supination by simply slinging the wrist to the neck, but the collar-and-cuff method actually gives nearly full flexion and semi-pronation, with the extensor expansion of triceps acting as a posterior splint, and it therefore seems to meet all the requirements. A broad arm-sling loosely folding the arm and forearm to the body can be used to relieve undue strain on the hand and wrist. ROBERT JONES pointed out that by treatment of the limb in flexion the action of the forearm as a deforming lever is prevented. The large hæmatoma produced by the severe trauma in these cases often means a potentially large mass of callus, especially as the periosteum is often widely stripped up, and no longer restrains callus-formation. Early massage and movement may lead to the complete ossification of this callus. AVELLAN found that the factor most potent in promoting excessive callus-formation was late reduction of the fracture with consequent disturbance of the already organising callus. But he also found that excess of callus was later absorbed. The interference with flexion seen in the records of his end-results he puts down to a failure to reproduce perfectly the forward tilt of the lower humeral epiphysis with the shaft, and the cause of this, he thinks, was treatment with the elbow imperfectly flexed.

AVELLAN considers at length why this fracture is so common in children. The reason, he believes, is the lateness of ossification at the lower end of the humerus, which means a longer retention of elasticity than there is for example in the epiphysis at the knee-joint. The elbow-joint yields to a backward strain by a slight backward movement of the bones as a whole. Then, as upward pressure of the forearm bones on the epiphysis of the humerus strains it to the limit of its elasticity, a fracture occurs at its junction with the shaft. As the process of ossification advances in the lower humeral epiphysis, the liability to typical supracondylar fracture correspondingly diminishes.

[1] Über Frakturen des unteren Humerusendes bei Kindern, Acta Chir. Scand., 1933, vol. lxxiii., Suppl. xxvii.
[2] The Treatment of Fractures, Vienna, 1929.
[3] Brit. Med. Jour., 1932, i., 739.

THE MIDDLE-CLASS PATIENT WHO CANNOT PAY

A FORTNIGHT ago we dealt in this column with the burden of medical fees as it falls on persons of small income already feeling the burden of illness. They are of the hospital class, that is to say, they have access when acutely ill to the public wards of a hospital or for consultation to its out-patient department. Moreover these contingencies can be met by membership of the Hospital Saving Association. Their difficulty is to pay their own doctor, and we pointed out how this difficulty might be solved by extension of a public medical service, such as the L.P.M.S., run by medical practitioners themselves. Subscribers to this service pay at present fourpence a week to enjoy the benefit of having a family doctor to attend them in case of illness and the necessary physic. No one with an income of more than £250 a year is eligible for this service, and it remains for us to consider the provision for illness in the group just exceeding

this income limit and yet not affluent enough to bear the many burdens of illness out of current account. It is not unreasonable to suppose that this group is in a position to pay for the services of a family doctor—every prudent householder does allow for this contingency in making up his yearly budget; but serious illness in a middle-class family brings such additional expenses as the visit of a consultant, the fee of a surgeon, or a period in a nursing-home or the paying wards of a hospital. It is in all these matters that the British Provident Association has stepped in to help its subscribers.

The B.P.A. is not a money-making concern but a scheme for mutual aid which started in 1921 as the National Provident Scheme for Hospitals and Additional Medical Services and has now behind it 12 years of actuarial experience. In a brochure which is being widely circulated this week three actual cases are quoted in illustration of the benefits conferred. In each case the annual subscription was £2 16*s*., and in the first case (No. 2193 on the books), being an excision of a portion of the pelvic colon, the combined charge of hospital and surgeon amounted to £123 18*s*. of which the B.P.A. contributed £115. In the second case, one of early appendicitis, the total bill of £69 6*s*. was nearly covered by the B.P.A. contribution of £61 8*s*. In the third case (No. 3862), one of hysterectomy, the total bill of £91 1*s*. was completely covered by the B.P.A. contribution. Each of these persons had secured this relief at the cost of 1*s*. 1*d*. a week. Any such scheme ought to be carefully scrutinised by those who propose to avail themselves of it, for it should be bona-fide insurance and not a lottery. The laboratory experiment of 12 years has proved the soundness of the B.P.A. scheme. It is essential for the possible number of subscribers to be sufficient to make it a success, and the B.P.A. does cover in its range the whole of the United Kingdom. It is not linked, even locally, with any particular hospital, nursing-home, or clinic, but leaves the choice free to practitioner and patient. Benefit is paid directly to the subscriber and interferes in no way with the professional relationship, either in the free choice of doctor or in the payment for services rendered. It may be that there are other schemes as good. There is one at least, namely, the Oxford University Provident Association, which includes general practitioner treatment. A report on the first year's working was given at Rhodes House, Oxford, on Nov. 12th by Sir FARQUHAR BUZZARD, who said that the membership was 1170 and that some £1600 had been payable in benefits during that period. The heaviest item, he said, in the schedule of claims related to services rendered by general practitioners; a welcome sign, he added, that members were encouraged to seek advice without undue delay, and so to prevent more serious complications which might lead to heavier claims in respect of nursing-home charges or surgical fees. It must be remembered however that the Oxford Provident Association deals with a constituency of young healthy unmarried males, for the most part with substantial financial resources behind them, and that its sickness experience is fundamentally different from that of a universal association such as the B.P.A. This association has in fact carefully considered whether to include general practitioner treatment among its benefits but decided not to do so, as it would mean doubling the present premium.

The B.P.A. has recently had a sum of money placed in its hands from the Pilgrim Trust for the sake of making its benefits more widely known. In a recent article in the daily press Dr. ALFRED COX has pointed out how excellent is the method of the B.P.A. for meeting the most urgent part of the problem of serious sickness, but it has, he said, received only scant encouragement. That is not the fault of its sponsors. At the public meeting held at the Mansion House in June of last year, the heads of the medical profession gave the scheme their unqualified blessing, and no one since has been able to gainsay it. We think the time has come for every practitioner seriously to consider whether it is not in the best interest of his middle-class patient and himself to advocate membership of the British Provident Association.

ASBESTOSIS

IN recent numbers of *Tubercle* Dr. S. ROODHOUSE GLOYNE has published a detailed account of the morbid anatomy and histology of asbestosis, based on the considerable number of cases which have come under his observation. His work will be welcomed by those who are interested in the subject of pneumoconiosis, for it will do much to overcome the opposition, stronger on the continent than in this country, of those who refuse to recognise this disease as an industrial hazard. Asbestos is a complex compound of silicon which is used pretty widely in industries, and both the miner who recovers it from the earth and the worker who manipulates it in factories are prone to suffer from pulmonary fibrosis, as the result of the inhalation of the fine particles of the mineral which escape into the air. In this country, of course, we are only concerned with the factory worker, to whom, there is plenty of evidence to show, it may be a very real danger.

The pathology of asbestosis appears to be essentially the same as that of silicosis, any difference in the distribution of the new-formed fibrous tissue being explicable by the larger size of the asbestos particle and its relative immobility in the lung. In asbestosis a nodular fibrosis is not so characteristic as in silicosis; a more diffuse fibrosis, particularly prominent in the lower lobes, is the rule. But occasionally, as in the figure published by Dr. GLOYNE, the asbestos lesions closely simulate those due to silica, and the coarse reticular fibrosis may be accompanied by characteristic whorls. It is perhaps not quite clear whether asbestos predisposes to pulmonary tuberculosis as regularly as silica, but persistent bronchitis and broncho-pneumonia are common terminal events in asbestosis; and the disease

has a high mortality-rate because of the cardiac failure which follows the extensive pulmonary fibrosis. Deaths from pure silicosis must be relatively rare in this country, but this is not true of asbestosis; for example, the drawing referred to above was made from the lung of a woman aged 26 who worked as a spinner for about five years till she left the industry at the age of 21. It is true that broncho-pneumonia was the immediate cause of death, but the fibrosis produced by five years' exposure to the dust, unaccompanied by tuberculosis, must have put a large part of the lung out of action and greatly disorganised the pulmonary circulation.

The peculiar value of Dr. GLOYNE'S observations lies in the demonstration that extreme pulmonary fibrosis may result from the inhalation of a silicate. Until fairly recently it was generally held that only free crystalline silica was capable of producing the disease, and it is even now maintained by some that silicates are innocuous. Such an opinion can no longer be maintained about asbestos, and a recent paper in the *Journal of Hygiene* by Mr. W. R. JONES, D.Sc., suggests [1] that in actual fact silicosis itself may more commonly be due to a silicate than to silica. Dr. JONES, speaking as a geologist, lays it down that in the rocks exploited in industries silicon may exist, not only as the crystalline oxide, silica, but as the fibrous mineral sericite, a hydrous silicate of aluminium and potassium. In his examinations of silicotic lungs Dr. JONES has invariably found large quantities of the minute sericite fibres, and he draws attention to the fact that while sericite is present in all rocks which are recognised as causing silicosis, it is absent from the rock, otherwise rich in quartz, in certain Indian and Scottish mines where, it is said, silicosis does not occur. To those who are well acquainted with the problems of pneumoconiosis, the reputed absence of silicosis in any particular dusty industry in itself carries little weight. But Dr. JONES has put forward a strong case and further investigations on the lines he has indicated will be awaited with interest.

[1] Silicotic Lungs: the Minerals they Contain. By William R. Jones, D.Sc., F.G.S. Journal of Hygiene, 1933, xxxiii., 307.

ANNOTATIONS

STIMULATORS OF METABOLISM

IN a leading article on Nov. 11th we referred to the powerful influence on basal metabolism exerted by certain benzene derivatives and to the dangers which might attend their application to clinical medicine. Further information has since become available. Tainter, Stockton, and Cutting [1] have now recorded observations based on the use of dinitrophenol in the treatment of 113 cases of obesity. Their experiences are not entirely reassuring. Colds or evidence of sinusitis were observed in ten patients, dyspnœa on exertion in four, gastro-intestinal upsets in three, alterations in appreciation of taste in six, cutaneous rashes in eight, cystitis in one, and a yellow pigmentation of the sclera in several. In nine cases the treatment had to be suspended, mostly on account of dermatitis. Since fatal pyrexia has followed the use of this drug in incautious doses, its advantages—which include, in addition to reduction of body fat, a lessening of hypertension when present and a relief of anginal symptoms in several instances—seem to be rather heavily outweighed. Moreover, since many of the unpleasant symptoms mentioned above cannot be attributed to over-stimulation of metabolism, or, in other words, to simple overdosage, it is obvious that dinitrophenol is a poison in more ways than one.

The experiences of Prof. Dodds and his associates with dinitro-o-cresol (see p. 1197) seem to be more encouraging. When judged by its effect on the basal metabolism, the latter drug is about five times as potent, weight for weight, as dinitrophenol. Toxic symptoms have apparently only occurred when the basal metabolic rate has exceeded + 50 and, with the exception of the yellowish pigmentation of the sclera, the nature of these is compatible with the suggestion that they are simply expressions of an abnormally high metabolic rate. Provided that further experience confirms this conclusion, such symptoms will not contraindicate the use of the drug, for thyroxine itself is a deadly poison when given in sufficient quantities. The pigmentation of the sclerotics, which is not, apparently, due to jaundice, cannot be lightly disregarded, however, especially as Tainter and his associates have observed the same phenomenon after the use of the more toxic dinitrophenol, and there is still room for research before dinitrocresol can be recommended as a general remedy for obesity. Perhaps the most interesting outcome of the observations of Dodds and Robertson is their discovery that although in myxœdema dinitrocresol raises the lowered basal metabolic rate to normal, it has no appreciable effect on the subcutaneous swellings from which the name myxœdema was originally derived. In this respect the effects of dinitrocresol are sharply contrasted with those of thyroxine, for the change in the facial appearance is the first and most startling effect of thyroid therapy in this disorder. The reason for this discrepancy is not yet known, but it emphasises the fact that the thyroid gland is something more than a stimulator of metabolism.

[1] Tainter, M. L., Stockton, A. B., and Cutting, W. C.: Jour. Amer. Med. Assoc., Nov. 4th, 1933, p. 1472.

PREGNANCY AND DIABETES

IN pre-insulin days pregnancy in the diabetic woman not only was comparatively rare, but was attended by grave risk to both mother and fœtus. A maternal mortality as high as 50 per cent. during labour or in the succeeding two years, and a fœtal mortality of 41 per cent., was recorded by Whitridge Williams in 1909, though in the light of improved diagnostic methods it is possible that these figures apply to the severer cases. In milder and "pre-diabetic" cases there is supposed to be a tendency for the fœtus to be abnormally large—perhaps because of the slightly though not excessively raised blood-sugar.[1] Indeed, the birth of one or more overweight children may be the first sign of a latent diabetes in the mother. Dr. Eric Skipper [2] has now carried out a comparative study of pregnancy occurring in diabetics since insulin has been available, based on 33 cases (37 pregnancies) observed in the diabetic department of the London Hospital, and 118 cases

[1] See THE LANCET, 1933, i., 211.
[2] Quart. Jour. Med., 1933, n.s. ii., 353.

(136 pregnancies) recorded elsewhere. He finds that even allowing for the likelihood of the mildest cases having previously remained undiagnosed, there seems to be a very considerable increase in fertility of diabetic women when under treatment with insulin. Rather surprisingly, the figures for fœtal mortality do not show a corresponding improvement, although Skipper concludes that the most important cause of fœtal death is poor control of the maternal disease, especially in the last months of pregnancy. Congenital abnormalities of the fœtus account for a relatively small number of deaths, and he found no evidence of congenital diabetes or fatal hypoglycæmia in the child after birth. The maternal diabetes became worse—as judged by the dosage of insulin necessary for its control—during the latter months of gestation in 13 out of 18 pregnancies, and the few recorded cases in which the presence of the fœtus within the maternal organism has been associated with improvement in the diabetic symptoms must be looked on as exceptional. On the other hand, an improvement in the diabetic condition after delivery was noted in 19 of the 33 hospital cases, being sometimes associated with hypoglycæmia. Skipper does not think that this hypoglycæmia can be attributed to lactation. The renal threshold in these diabetics was often found to be lowered, and less often raised, during pregnancy.

PITUITARY BASOPHILISM

IT seemed at one time possible to generalise about the pituitary; to introduce it with a suitable verbal flourish as the master of the ductless gland series, the determiner of the metabolic gradient, &c.; to say that it stimulated growth and brought to structural and functional perfection the thyroid, parathyroid, suprarenal cortex, and the gonads; to declare that directly or indirectly it activates all the tissues of the body, and through the liver affects the combustion of fats and sugars. Some were indeed tempted to go still further and assert that the acidophil cells produced the growth hormones and suggest that the basophil cells were the source of the sex hormones.

This neat labelling received a shock with the announcement of Harvey Cushing's pituitary basophilism. This syndrome repeats itself with great constancy from case to case and is characterised by obesity of the trunk and face, lineæ distensæ, loss of sex function, osteoporosis, hypertension, and hirsutism in females. In these cases a basophilic adenoma of the pituitary is present. It is clear that a re-examination of current ideas of pituitary function must be undertaken. A discussion with such a purpose took place at the section of therapeutics and pharmacology of the Royal Society of Medicine on Nov. 14th, under the chairmanship of Prof. J. H. Burn; it was opened by Prof. H. H. Woollard and Dr. R. D. Lawrence, and Dr. Parkes Weber, Dr. P. M. F. Bishop, and Dr. F. G. Lescher were among the speakers. Two cases of pituitary basophilism which had been studied in great clinical detail were described respectively by Dr. Lawrence and Dr. Lescher. One of these cases, showing every feature that has been attributed to this syndrome, was interesting for two reasons. Spontaneous fractures and osteoporosis were associated with an increase of blood phosphatase to between two and three times the normal amount; irradiation directed to the pituitary fossa brought about a clinical cure even to re-establishment of menstruation which had been in abeyance for six years. The other case was also of interest because it reproduced the syndrome in every detail and a malignant tumour of the left suprarenal was discovered. The patient died twelve hours subsequent to the removal of this hypernephroma. The post-mortem examination gave an opportunity for making sections of the pituitary and a small collection of basophil cells was discovered, presumably a basophilic adenoma. The discussion revealed that the evidence for attributing the origin of the sex hormones to the basophilic cells is quite unsatisfactory. The evidence turns on the histological changes in the anterior lobe during pregnancy and after castration. There is little unanimity in the different descriptions and there is great variation from one species to another. The statement that the centre of the anterior lobe, where basophil cells are most numerous, is richer in gonadotropic hormones has never been supported by very convincing evidence. It is also clear that pituitary basophilism is not the expression of any excessive gonadic activity. Rather it is the reverse of an activating syndrome. Its principal features suggest a slowing down of metabolism, with high sugar tolerance, obesity, and sexual decay—a sort of physiological castration with a touch of virilism. The reproduction of the syndrome in dogs by the use of gonadotropic hormone from pregnancy urine was accomplished with reasonable similitude. This deepened the confusion, for the dogs remained stunted, became obese, and were sexually infantile—i.e., they exhibited no gonadokinesis.

Thus to the conception of a universally activating anterior lobe there must be added the theory that it is also producing substances which are inhibitory, depressive, and damaging to the organism. For the moment we must entertain the suspicion that the basophil elements are in some way the antagonists of the acidophil cells and that their over-activity makes for hypertensive, degenerative phenomena—the changes of senescence. The issue from the pituitary of a series of events hostile to the survival of the organism would indeed be a strange biological spectacle, making the origin and survival of the species even more mysterious than before. In the pituitary we seem to have found the spur of all activity and at the same time the seeds of destruction.

The discussion necessarily touched on the problem of virilism. The mild degree of virilism that attends a physiological castration, such as is manifest in the menopause or in pituitary basophilism, was felt to be very different in degree from the frank cases of sex reversal such as had been described by Dr. Gordon Holmes. Something additional to mere gonadic suppression was necessary to account for these. This additional something was held to be the abnormal proliferation of some mesonephric derivative such as is regularly present in the female. The cardinal point in the explanation of the sex reversal which is always female to male and never the reverse apparently lies in the bisexual nature of the ovary, ample embryological and experimental proof that the rete ovarii is a rudimentary testis was elaborated in the course of discussion.

JOHN TWEED

THE genius of John Tweed, who died recently in London, can be recognised through the character of the public commissions which he received. The finishing of the Wellington monument in St. Paul's Cathedral, left uncompleted by Stevens, was entrusted to him, while important statues by him are to be found in our dependencies, for example Queen Victoria and Clive in India and Rhodes in South Africa. He executed also a statue of Captain Cook, which is placed at Whitby, and one of Sir John Moore at Shorncliffe. For the great figures in imperial development were the subjects which mainly attracted him.

But it is interesting to recall that one of his first, if not his first publicly exhibited work, was a bas-relief of John Hunter. Tweed was a Glasgow man and had here the assistance of Clelland, the famous anatomist who was also an artist, in the execution of the work. A plaster plaque of this bas-relief hangs in the Conservator's office at the Royal College of Surgeons of England, presented by Sir John Bland-Sutton, and its deposition at the College seems to have revealed the fact that Tweed had been to some extent influenced by a pencil portrait from the hand of Sir Nathaniel Dance-Holland in 1793. Dance-Holland was a portrait painter before marriage brought him money and the opportunities of public life. He enjoyed the patronage of George III. and was an original member of the Royal Academy. The sketch which also hangs in the Conservator's office at the College was presented by Capt. Sir Everard Home in 1843. Tweed also made a portrait bust of Dr. Jameson, while one of his last works was a portrait bust of Sir Arthur Keith, which is at the present moment on exhibition at Aberdeen.

THE CONSTITUTION OF DURHAM UNIVERSITY

THE situation which began with the termination of Prof. H. J. Hutchens's engagement as lecturer on pathology at Newcastle College of Medicine, has developed into a widespread demand for a revision of the constitution of Durham University and its constituent colleges. On Nov. 1st, as we have already announced, the court of governors of the College of Medicine appointed a committee to consider the recommendations made by Sir Amherst Selby-Bigge as a result of his own inquiry, and after appointing eight members of the Court to form this committee (four of them being members of the college council) the Court resolved to invite the Chancellor to nominate to the committee three additional members conversant with university practice elsewhere, one of whom should be designated by the Chancellor as its chairman. The City Council of Newcastle-on-Tyne has now decided that the constitution of the University is a matter in which the city has a direct interest; on the high ground that they are the custodians of education in the city, and on the more material ground that their support of Armstrong College amounts to a rate of a penny in the pound. At a meeting of the City Council on Nov. 15th it was resolved, by 55 votes to 1, to request the Chancellor to take such steps as he might deem desirable to secure an independent and impartial examination of the constitution of the University and its constituent colleges "with the object of securing such changes in the constitution of the University as will bring them into harmony with well-established university constitution and practice elsewhere." Sir George Lunn, who moved the resolution at the meeting of the City Council, disclaimed any concern with recent internal troubles, preferring to put his finger on what he considered to be a faulty principle. One article of association of the College of Medicine, he said, makes the court of governors the supreme governing power; another article gives power to the council of the College, a smaller body, to suspend or refer back any decision that the court may come to. For the last two years the relationship between the court of governors and the council of the College had been "Pull devil, pull baker"—and he left his hearers no choice as to which was which. Councillor Angus Watson, speaking as a governor of the College long before this issue arose, said the question was whether a small monopoly interest should govern all public affairs. As one of the three members of the court of governors appointed to confer with Prof. Hutchens, he said: "We came to the conclusion that, in view of all the bitterness that had been generated and all the ill-feeling now existing, we could not expect Prof. Hutchens to go back with dignity, but we were so conscious of the fact that he had grounds for real complaint that we awarded him £8000, and that is sufficient evidence of what our views were." In the course of the discussion in the City Council the words were quoted of Prof. Rutherford Morison who, in pleading for reform, had said "future students passing from Newcastle will have a lowered standard because of the way the management is being conducted." The City Council expressed its feeling that action should be taken to bring the constitution of the University into harmony with practice elsewhere by accepting Sir George Lunn's motion with only one dissentient.

HOSPITALS AND MOTOR ACCIDENTS

WHAT Lord Derby in the House of Lords recently described as "an intolerable burden" upon the voluntary hospitals is at last to be lightened. On the motion of Lord Luke (as noted in our Parliamentary Intelligence, p. 1181), the Peers, notwithstanding Government opposition, added to the Road and Rail Traffic Bill, which has now received the Royal Assent, a clause providing that hospitals shall be paid expenses reasonably incurred by them in the treatment of motor accident cases. The amount to be paid in respect of each in-patient is not to exceed £50, or, in the case of an out-patient, £5. Under the Road Traffic Act of 1930 no more than £25 could be recovered, although the cost is often far greater. Lord Greville instanced a case which had cost St. George's Hospital £125. It has been estimated that the cost to the hospitals of treating accidents approaches a quarter of a million a year, of which only about one-eighth is recovered. In adding this clause to the measure the House of Lords simply followed its own precedent when it inserted a similar clause in Lord Danesfort's Road Traffic (Compensation for Accidents) Bill which was recently withdrawn because of the impossibility of getting it through Parliament in the short remainder of the late session. The Government opposition was based upon the supposed incongruity of such a provision in a measure for the better regulation of goods traffic, and the possibility that the House of Commons might also think it not germane. But when the Bill went back to the Commons the new clause was quietly agreed to on the Government's own motion.

While this measure was passing through its later stages the Select Committee on the Road Traffic (Compensation for Accidents) Bill and Lord Moynihan's Road Traffic (Emergency Treatment) Bill issued a report dealing with the latter measure, which provides for the payment of a maximum remuneration of three guineas to doctors and hospitals for treatment. Thinking, however, that a maximum payment might tend to become a standard rate, the committee decided to substitute a standard rate of 12*s*. 6*d*., being a minimum of half a guinea with a small addition for drugs and dressings, and an allowance of 6*d*. for every mile beyond two which a doctor travels to attend a case. As regards the source of these payments the committee accept the principle of the Bill, and propose that the liabilities should be third-party risks and consequently compulsorily insurable. Taking the number of persons killed and injured as costing 12*s*. 6*d*. per head, they make the annual cost to be £105,416, which works out at an addition of about a shilling per car to the insurance premium.

Other people have calculated the addition at half-a-crown. The amount, in any event, would be inconsiderable, and to throw the cost on the motoring public appears to the committee to be the only practicable method of collecting the money. The medical profession is unlikely to feel much exhilaration at the prospect of the exiguous fees which the Select Committee regard as sufficient payment for work possibly difficult and anxious and likely enough to interfere seriously with the claims of ordinary patients. But since, more often than not, the doctor at present does not get a penny, he may console himself with the philosophical reflection that something is better than nothing.

VITAMIN B_2 AND GLOSSITIS

THE clinical symptoms produced by a diet lacking in vitamin B_2 or conversely, its curative properties, are difficult to estimate, since products rich in this vitamin contain also other substances, at present unidentified, to which any effects noticed may be due. D. K. Miller and C. P. Rhoads[1] have recently sought to elucidate the action of vitamin B_2 by prolonged feeding of dogs on diets partially but not completely deficient in this vitamin and have been able to produce symptoms very similar to those of sprue. The diet was low in protein, high in fat and carbohydrate, and contained only that amount of the vitamin-B complex which is present in rice polishings. A proportion of dogs developed stomatitis, glossitis, and gastro-intestinal disturbances. Anæmia occurred in 60 per cent. of the animals, and in half of these it was severe in type. Histological study of the bone-marrow in the latter group showed features similar to those occurring in sprue or Addisonian pernicious anæmia. A. M. Hutter, W. S. Middleton, and H. Steenbock[2] have also been able to produce glossitis in rats by diets deficient in vitamin B. These experiments, together with earlier investigations, suggest that the glossitis of sprue and Addisonian pernicious anæmia may be due to lack of part of the vitamin-B complex. On the other hand Hutter and his colleagues found that the addition of vitamin B in the form of yeast to the diet of patients with Addisonian pernicious anæmia was not invariably successful in curing the glossitis unless liver was also given. Clinical glossitis cannot therefore always be due to a simple deficiency. The exact character of the yeast used was unfortunately not defined. L. Wills has clearly shown that the antianæmic potency of yeast varies according to its preparation, and is not related to its vitamin-B content, and it is possible that the antiglossitis effect of yeast shows corresponding variations. It is clearly essential for workers to use some purified source of vitamin B_1 and B_2 for dietetic experiments.

THE MIND AND BRAIN OF THE KENYA NATIVE

AT a recent meeting of the Eugenics Society Dr. H. L. Gordon described a series of investigations, carried out by himself and Dr. F. W. Vint, upon the brain and mind of the Kenya native. A series consisting of several thousand male natives, representative of the different tribes found in Kenya, were examined by anthropometric and psychological methods, the former according to the technique elaborated by Prof. R. J. A. Berry and the latter by performance tests and the Porteous maze test. The results of the psychological tests point to the conclusion that, according to the standards used, the average Kenya native exhibits a definite degree of mental inferiority as compared with the average European. These findings were generally supported by the examination of a series of 100 brains of adult male natives performed by Dr. Vint in the Government Medical Research Laboratory. Dr. Gordon concluded his address with a plea for the institution of a comprehensive investigation of the same material under approved scientific auspices. If, as here suggested, a relative degree of cerebral deficiency characterises some of the native races under British trusteeship, consequences of the utmost medical, legal, and educational importance are raised for the imperial administrator. It is to be hoped that Dr. Gordon's plea will find a sympathetic hearing.

[1] Proc. Soc. Exp. Biol. and Med., 1933, xxx., 540.
[2] Jour. Amer. Med. Assoc., 1933, ci., 1305.

MEDICINE AND LITERATURE

THE Lloyd Roberts lecture, delivered before the Medical Society of London on Nov. 16th by Sir Humphry Rolleston on this subject proved, as was inevitable, seeing the lecturer, a thoroughly valuable disquisition, and one which librarians should keep as a book of reference. The practical difficulty of keeping pamphlets and reprints of lectures and addresses is a very real one to them, as to all who make collections of books, so that it is worth while mentioning that this essay should secure a place in libraries and be made easy of access there. How great has been the association between medicine and literature, apart from medical literature, is not realised until we have before us an orderly category such as Sir Humphry Rolleston provided, and the multifarious information is supported by amusing references and a wealth of accurate dates.

THE COOKING OF MEAT

OUR knowledge of the composition of common articles of diet is based almost entirely on analysis of uncooked food—a handicap to the physician prescribing for the needs of individual patients. Cooking has hitherto been considered mainly as an art, but Dr. R. A. McCance and Mr. H. L. Shipp, in a report[1] from the biochemical laboratory of King's College Hospital, have dealt with it as a scientific problem, directing their study to the cause and extent of the various losses caused to flesh foods by cooking. The effect of this inquiry is to upset a number of ancient and cherished prejudices. Many people who have never heard of the pellicle theory have a vague idea, encouraged by cookery books, and even by the Encyclopædia Britannica, that the "goodness" may be kept in meat by starting to cook it at a high temperature. The idea is that this will cause the proteins on the outside of the meat to coagulate, thus forming an impermeable skin which retains the water, salts, and protein in the meat. But Dr. McCance and Mr. Shipp find that it makes no difference to the losses whether meat is plunged straight into boiling water or placed in cold water and slowly heated to 100° C., and they suggest that to bring water to the boil or to raise an oven to a high temperature before inserting the joint is merely a waste of heat unless it can be supported on grounds of palatability or digestibility. Other things being equal, the best method of cooking is generally assumed to be the one which produces least loss, and cooking by steam, especially in the small autoclave or pressure cooker, is popularly believed to be very conservative. The investigation proves, however, that shrinkage and loss become intensified when the temperature is raised above 100° C., so that the only economy effected by pressure cooking as against steaming is economy in time and

[1] The Chemistry of Flesh Foods and their Losses on Cooking. M.R.C., Spec. Rep. Ser. No. 187. H.M. Stat. Office. 2s. 6d.

fuel. Both steaming and pressure cooking have the advantage over heating in water that all loss due to leach is avoided. The importance of this varies inversely with the size of the pieces of flesh cooked. Small pieces of fish should be steamed and not boiled in order to conserve the salts, whereas it makes little difference to a piece of meat of 1½ lb. or more whether it is cooked in water or steam. Those who like their meat well done will rejoice to learn that the much vaunted underdone beef has no advantage in nutritive properties over the well-cooked joint. The latter has shrunk to a greater extent, and will therefore feed fewer people, but, since the main part of the lost weight is water, pound for pound overcooked meat contains more protein and probably more fat than undercooked meat, and is thus a more concentrated food. The loss of water when meat is roasted is nearly all due to evaporation, and the loss of salts is slight, as they are left on the surface of the meat. Adherents of the electric oven claim that a joint roasted by electricity is less dry than one roasted by gas. The inquiry shows that this is due to the fact that there is less ventilation and therefore less evaporation in the electric oven. The joint may indeed be more juicy, and consequently more palatable, but from the chemical point of view the advantage is on the other side, because any method of cooking attended with evaporation tends to conserve the salts and extractives in the meat. Thus roasting, grilling, and frying all lead to smaller salt losses than steaming or boiling, and people who have a weakness for fish and chips may derive comfort from the knowledge that loss of salts accompanying the frying of fish is almost negligible.

THE ŒSTRUS-PRODUCING HORMONE

IT is now a little over a decade since Allen and Doisy began the modern advance in the study of sex hormones by their use of the vaginal cornification reaction as a test for œstrus-producing activity. During this time a vague and neglected subject has become one of the most active growing-points of physiology. Following Allen and Doisy's work in 1922, chemical and biological research on œstrus-producing extracts of the ovary proceeded apace until progress was checked by the difficulty of obtaining adequate amounts of material from such sources as cow and pig ovaries. This difficulty was removed by B. Zondek, who showed that highly potent extracts having the same biological action could be made from the urine of pregnant women. With this readily available source, chemical work jumped ahead, and in a little over two years crystalline œstrin had been prepared almost simultaneously in four different countries by Doisy, Butenandt, Laqueur, and Marrian.[1] Moreover, two distinct substances, a ketohydroxy form and a trihydroxy form, were isolated, the first having a greater biological activity. At this stage further chemical work was again held up for lack of adequate material; a few milligrammes of the pure substances represented many weeks' work. Zondek's subsequent discovery that the urine of pregnant mares was a far richer source than the urine of pregnant women, has led to the production by Girard of the ketohydroxy substance in amounts which three years ago would have appeared fantastic. Grammes are now produced where milligrammes were previously aimed at.

The increasing availability of the œstrus-producing substances has led to intensive analytical work and their exact chemical constitution is now practically determined. This work has led to the very interesting discovery that alteration of the groups around the carbon skeleton results in great changes in biological activity, and an œstrus-producing compound more active than any so far found in the animal body has already been prepared from the natural product. Another line of attack has recently been opened by J. W. Cook and E. C. Dodds, who have demonstrated that certain synthetic compounds of structure analogous to that now accepted for natural œstrin may have œstrus-producing activity.[1] There can be little doubt that substances identical with the natural ones will very soon be synthesised. It yet remains to prepare any form of crystalline œstrin from the ovary, and so far it is impossible to say in what form or forms it is elaborated by this organ. Crystalline trihydroxy œstrin has, however, now been prepared from the human placenta by Collip.

The difficulty of standardising the biological assay of the œstrus-producing substances in different laboratories made it desirable to set up some standard of reference, and for this purpose an international committee met in London in 1931 under the auspices of the Health Organisation of the League of Nations. This committee agreed [2] to establish an international standard of the ketohydroxy substance, the international unit to be the œstrus-producing activity contained in 0·0001 mg. of a crystalline preparation to be made from samples provided by Doisy, Butenandt, Laqueur, and Girard. A little over 20 g. was contributed in all, and the standard has been set up at the National Institute for Medical Research, London, and is now available for distribution as required. Up to date, samples have been supplied to 20 countries for local distribution and to a number of laboratories in Great Britain.

The possibilities for the next decade are unlimited. From the clinical viewpoint, the œstrus-producing substances alone are unlikely to be of paramount importance compared with the hormones of the corpus luteum and of the anterior pituitary body. In the near future, however, we shall see the production of highly purified or crystalline preparations of these other hormones, possibly in very large quantities. When we have learnt to control their action, particularly that of the gonad-stimulating substances, agents of amazing potency will be available for gynæcologists.

SPONTANEOUS DISLOCATION OF THE ATLAS

SPONTANEOUS subluxation of the atlas is not an exceptionally rare condition, as Mr. F. A. R. Stammers and Dr. Philip Frazer point out in the case-report which appears on p. 1203. The stability of the connexion between the atlas and the axis depends almost entirely on the transverse ligament passing behind the odontoid process, and of course on this process itself. There is nothing in the articular surfaces to keep the atlas in place, nor are any of the other connexions or relations of the bones adapted effectually towards this end. Thus on anatomical grounds alone, there can be little question of the validity of Stammers and Frazer's reference of the condition to softening and stretching of the ligament. The brief record of the neurological findings in this case presents some food for reflection. The general resemblance to the Brown-Séquard syndrome is evident, but the Babinski phenomenon is found on the same side as the non-tactile sensory alterations, the side opposite to the slightly paretic upper limb. There is, of course, no question of anything like even a functional hemisection in this case, and one may legitimately hypothesise about the genesis of these

[1] See THE LANCET, 1933, i., 373.
[2] Ibid., p. 1361.

symptoms. It is possible that they may depend on some vascular affection, interfering with the transmitting apparatus although not interrupting it. Such a partial block could be afforded by œdema due to a certain amount of venous obstruction, which in its turn might be referred to the veins round one of the anterior roots being brought against the back of the articular processes. A dislocation of the atlas carrying the skull with it would imply the cord being carried forward with the bones, whereas an atlas dislocated forward between the skull and the axis would mean pressure on the cord from behind by the posterior arch of the bone. An œdema of the left side, produced in such a way, would give the sensory and brachial symptoms, while the motor disturbance of the right lower limb can be brought into line with these by assuming the corresponding and affected pyramidal fibres to be uncrossed at the level of the lesion—i.e., to be as yet in the direct pyramidal tract of the left side.

PHYSIOLOGY OF HIGH ALTITUDES

IN Hamburg, under the general editorship of Prof. Ludolph Brauer, a new periodical is being published under the name of *Acta Aerophysiologica*.[1] It is devoted to a branch of physiology which is attracting more and more interest because of the attempts to climb the highest Himalayan peaks and because of the rapidly increasing popularity of air travel. Each contribution is printed in the language of its author—a wise arrangement if one may judge by the somewhat foreign English of the polyglot introduction.

To the first number Dr. Dybowski, director of the physiological laboratory of the aviation research centre in Warsaw, contributes a description of the decompression chamber recently erected in his department. The cylinder is 5½ metres long and 3 metres in diameter, and is capable of holding six subjects and two observers. It is fitted with a trap by means of which instruments or food can be passed in and out without increasing the pressure within. The pressure can be kept for many hours on end at a level corresponding to 14,000 metres above sea-level. The temperature within the chamber can be varied and can be reduced to 54° C. All controls are duplicated within and without. Communication is by telephone, a laryngophone replacing the ordinary mouthpiece in order that the hands may be left free and that the voice may still be audible even at very low pressures. In this chamber Dr. Dybowski plans to make a series of clinical investigations under conditions approximating closely to those of actual air travel. No decompression chamber of this magnitude or convenience exists in this country, and the Warsaw centre is to be congratulated on its initiative.

TRAFFIC IN OPIUM

THE council of the League of Nations has expressed satisfaction at the ratification by Persia of the convention of 1931 for the limitation of the manufacture of narcotic drugs, but, in the absence of ratification of the Hague Convention of 1912 and the Geneva Convention of 1925, the coöperation of a country so large a producer of raw opium is far from effective. It is gratifying to learn that the council of the League is issuing to the various governments questionnaires, as devised by the League of Assembly, with a view to preparation for a conference on the limitation of the cultivation of the opium poppy and the harvesting of the coca leaf. For various reasons the production of opium has of late greatly exceeded the demand, and stocks of the drug are accumulating.

The Chinese Government has also decided to accede to the 1931 limitation convention, and its representative has reported that, in spite of the difficulties confronting his Government, it is determined to cope effectively with the menace of opium and other dangerous drugs. Moreover, a standing subcommittee has been set up to promote the coöperation of the Chinese authorities and those of the other powers concerned in giving effect to chapter iv. of the Hague Convention of 1912. That chapter provided for the powers having treaties with China, in conjunction with the Chinese Government, taking measures to prevent smuggling of opium and other narcotics into Chinese territory as well as into far Eastern colonies and leased territories in China, and for restricting and controlling the smoking of opium.

Turkey, another opium-producing country, has now acceded to the conventions of 1912, 1925, and 1931, and it is hoped that the cultivation and export of raw opium, as well as the manufacture of narcotic drugs, will now be effectively controlled and the cultivation of Indian hemp entirely prohibited in that country. It is also understood that Yugo-Slavia, also an opium-producing country, will enter into an agreement with Persia and Turkey with a view to limit the cultivation of the opium poppy in all three countries.

THE Thomas Vicary lecture of the Royal College of Surgeons of England will be given by Mr. L. W. G. Malcolm on Thursday, Dec. 7th. Mr. Malcolm will speak on prehistoric and primitive surgery. On Dec. 14th, Prof. A. H. Burgess will deliver the Bradshaw lecture, and his subject will be electro-surgery. Both lectures will take place at 5 P.M., at the College, Lincoln's Inn-fields, and are open to members of the medical profession on presentation of their cards.

THE SERVICES

ROYAL ARMY MEDICAL CORPS

ARMY DENTAL CORPS

Lt. S. G. Watson to be Capt.

TERRITORIAL ARMY

Lt.-Col. J. B. Stanley, having attained the age limit, retires, and retains his rank, with permission to wear the prescribed uniform.

Capt. J. G. Weston resigns his commn.

2nd Lt. A. T. Fripp (late Guards M.G. Regt.) to be Lt.

INDIAN MEDICAL SERVICE

Capt. G. J. Smith to be Maj.

DEATHS IN THE SERVICES

Colonel Michael O'Halloran, late R.A.M.C., who died at Folkestone on Nov. 19th, at the age of 72, entered the medical service of the Army almost immediately after graduating in medicine and surgery in the Royal University of Ireland. He reached the rank of Surg.-Maj. in 1897, in which year he saw service in India, and took part in the operations on the North-West Frontier. He also served in the South African War of 1899–1902, and received the Queen's medal with clasp and the King's medal with two clasps. In 1905 he became Lt.-Col., and was retained on the active list in the late war.

[1] Broschek and Co., Hamburg 36. Obtainable from Conrad Behre, Kleine Johannisstrasse 19, Hamburg 1. R.M.3 (first issue).

THE PREVENTIVE ASPECTS OF MEDICINE

A Series of Lectures in progress during the Winter Session at King's College Hospital Medical School

VII.*—PREVENTABLE DISEASES OF SCHOOL-CHILDREN

SCHOOLS are populated by aggregations of children at highly susceptible ages almost undiluted by the less susceptible adult, and moreover receive every term fresh batches of unsalted newcomers. Thus they have less herd-immunity than a natural herd or an ordinary family, and, as is only to be expected, they furnish us with some of the severest tests and most interesting problems of preventive medicine.

Protection against Preventable Diseases

Let us consider the preventive agencies under four general headings.

SPECIFIC RESISTANCE.

1. *Natural immunity* inherited or acquired by previous attack which may have been (*a*) "clinical"—i.e., known, obvious, and recorded; (*b*) "modified" as in measles modified by convalescent serum; (*c*) "sub-clinical" or so mild as not to have been noticed or recorded.

2. *Artificially acquired immunity* (*a*) by active immunisation (generally more or less lasting); (*b*) by passive immunisation (generally very evanescent).

NON-SPECIFIC RESISTANCE.

3. "*General*" *resistance* increased by diet, sunlight, fresh air, exercise, &c.

4. *Limitation of infection* by (*a*) isolation of cases; (*b*) search for carriers; (*c*) disinfection; (*d*) other methods of environmental hygiene, ventilation, and spacing out.

The subject is so vast that I shall not deal with 1 and 2, those interesting questions of immunity upon which, on Jan. 25th, you will hear Dr. R. A. O'Brien. He tells me that he will deal with diphtheria, scarlet fever, and the other notifiable infectious diseases; Dr. F. J. Poynton will speak to you on the prevention of acute rheumatism, and an important part of Section 3, the increase of non-specific resistance by a proper diet, will, no doubt, be covered by the lecturers on diet and vitamins. Although I have had to deal with one or two outbreaks of disease in schools due to water-borne disease, I shall not discuss them, since Dr. R. P. Williams has already told you about the necessity for a pure water-supply. My lecture, therefore, for the most part will be about my fourth heading.

Limitation of Infection

One of the first things in school-medicine which will strike you is that nearly all the great loss of school-time caused by illness is due to diseases which from a hospital-medicine standpoint are regarded as essentially minor diseases, and that more than three-quarters of this great loss is due to diseases spread by "droplet infection."

How much these diseases mean to elementary school-children is shown in the following Table, condensed from one compiled by C. C. Wilson and his co-workers (1931), who obtained their data from elementary school-children in New Haven, Conn. It is by no means a perfect picture, for it relates, unfortunately, only to one year, and one year's experience may differ greatly from another according to the varying prevalence of influenza, measles, and other infectious disease. Also it only takes into account conditions resulting in three days or more consecutive illness. However, the form in which the material is presented is a good model, for it shows not only the proportion of all cases of illness due to each disease group, but also the proportion of school-time lost through each group.

ILLNESS IN ELEMENTARY SCHOOL-CHILDREN, NEW HAVEN

Illness of three days or more.	Per cent. of all cases of sickness.		Per cent. of total days of sickness lost.	
Colds	37·3	53·7	24·3	38·9
Sore-throats (tonsilitis, &c.)	12·7		8·3	
Other respiratory	3·7		6·3	
Measles	10·2	27·9	15·4	44·2
Mumps	11·1		12·1	
Whooping-cough	3·4		12·1	
Chicken-pox	2·2		2·8	
Diphtheria	0·7		1·2	
Scarlet fever	0·3		0·6	
Other diseases	15·9		14·4	
Trauma	2·5		2·5	
Total	100·0		100·0	

You all know how much influenza varies from year to year in schools as elsewhere; 1930, for example, in this country was singularly free from it, whereas 1931, 1932, and 1933 all had epidemics in many schools in the Lent term.

Measles in elementary schools shows an almost regular two-year periodicity. The enormous variation of measles in London elementary schools—34,000 odd in 1930, 3800 odd in 1931, and 35,000 odd again in 1932—is in contrast with the almost steady incidence of scarlet fever during these years. This year however there has been a considerable increase in incidence of scarlet fever.

PUBLIC SCHOOLS

The public schools to which my subsequent observations will mainly refer show a rather different picture, though some large features are much the same. Colds and sore-throats show much the same prominence, but owing to the higher age-grouping the "specific" infectious diseases naturally loom less large.

Of the total cases admitted to a public school sanatorium, we should probably find that on an average for a number of years one-quarter of all admissions would be for epidemic influenza; one-quarter for catarrh, chill, and nasopharyngitis; and one-eighth for definite sore-throat, whilst about one-tenth of admissions would be for the common infectious diseases of childhood.

Droplet Infection.—A committee of the Medical Research Council has for some years been investigating the prevalence and spread of epidemics in residential schools, especially those spread by "droplet infection." This investigation is on two lines: (1) epidemiological, into the conditions governing the spread of such epidemics in schools; (2) bacteriological, in cases where the more serious complications, such as pneumonia and ear disease, occur in epidemic form. When their report appears, reliable estimates of the total time lost owing to illness and of the proportions due to the various diseases may be hoped for. In the meantime we can estimate roughly that diseases spread by droplet infection are responsible for 80 per cent. of all educational time lost by disease in public boarding schools, an

* The lecture in this series which was to have been delivered by Dr. C. B. Heald on Nov. 23rd has been postponed to the end of March, 1934.

average total of 10 days per annum per boy and 12 days per annum per girl. This estimate of 10 days absence seems also roughly to apply to the elementary school-child, although his terms are longer.

Apart from all questions of suffering and anxiety, this involves a serious financial loss, for each school boy-day in an English boarding-school may be roughly estimated to cost the parent £1. The monetary value of the education lost, therefore, in a public school of 500 boys owing to droplet infection is on an average £4000 per annum, apart from all costs of nursing and medical care, and the dislocation of all school routine, both work and play, which an epidemic involves. To prevent some at least of this droplet infection is our ideal.

The Organisation of a Preventive Service

How are we to organise our preventive service? The first thing the successful strategist arranges for is information; he builds up an intelligence system.

RECORDS

Supposing you to be the medical officer of a boarding-school, I advise you to keep for preventive work at least three sets of records. The first you will probably find already kept at the school—a card index with the previous medical history of each boy. The second is a daily incidence chart for all illnesses, but of this more later; and the third consists of the bed charts of all dormitories.

Records of Medical History.—From the first—the records of each pupil's medical history—you will not only get a good idea of the relative proportion of immunes to any disease, but you can also map out an immune chart of any dormitory or class-room. The proportions of pupils immune by reason of recorded previous attack at the time of their entry to their public schools have been calculated by several observers—e.g., L. R. Lempriere (1932) for boys, J. H. P. Paton (1926) for girls. I will not trouble you with their exact figures, but you can reckon roughly that 70 per cent. of the boys (not the same 70 per cent., of course) will be immune to each of the following: measles, chicken-pox, and whooping-cough; that about 20 to 30 per cent. will have a history of attack in the case of mumps and German measles, but that only 5 to 8 per cent. will have a history of scarlet fever. Girls will have rather lower percentages throughout. A Dick test for susceptibility to scarlet fever will show much higher figures for these well-to-do children than you would expect from the percentages given in the text-books, which are based upon tests done on elementary school-children; and you may assume that 66 per cent. of these public school boys are Dick-positive or susceptible at entry.

Incidence Charts.—The second record—a daily incidence chart of every case of illness occurring in the school (and in each individual house of the school if it be divided into houses)—is, in my opinion, as necessary to a proper understanding of the health of a residential school as a temperature chart is to the study of the illness of an individual.

Dormitory Bed Plans.—The third form of record—dormitory bed plans for every dormitory—can be prepared with very little trouble by the prefects of the dormitories. You should know your dormitories, their floor and window areas, their cubic space and all their features thoroughly. Class-room desk plans are sometimes valuable, especially in day schools; but in the modern boarding-school the child usually spends as much or more time in mathematical, science, and language "sets" or "divisions" as he or she does in "form," and the matter is a very complicated one. W. F. Reasner, of Minneapolis (1923), has prepared charts showing (1) the spread of measles in a class-room from an unrecognised case of measles, and (2) the effect of prompt isolation of a contact, when no spread occurred. It is, however, in scarlet fever and diphtheria that these class-room charts are most likely to be useful.

Some Common Diseases

Of the more dreaded but happily much rarer diseases of the nervous system spread by droplet infection, such as poliomyelitis and cerebro-spinal fever, I shall not have time to speak, but let us consider seriatim a few of our most frequent enemies in schools, such as influenza, measles, and tonsillitis.

INFLUENZA AND MEASLES

Influenza.—The explosive character of an influenza epidemic is admirably seen on daily incidence charts, which give almost as good an indication of the diagnosis as does the clinical character of the cases. The attack-rates may be enormous. In 1890, for example, half the boys of Chesterfield Grammar (day) school were attacked by influenza on a single morning, that of Monday, Jan. 27th. I have seen 95 per cent. attacked in a single boarding-house of a public school, and in November, 1918, every boy in a preparatory school was attacked. If attack gives any immunity against further attack, such immunity is very evanescent.

Inoculation, it is now pretty generally agreed, has no effect upon the incidence of epidemic influenza. For example, a comparison of the attack-rates on 3686 boys all of the same schools shows that 1684 inoculated boys had an attack-rate of 26·4 per cent., 2002 uninoculated boys had one of 28 per cent.—a difference statistically insignificant. The most promising way whereby influenza might conceivably be prevented in schools is perhaps hardly practicable at present; it would be by achieving the complete open-air school, with open-air dormitories, open-air class- and dining-rooms, and even open-air bath-rooms and changing-rooms, for the latter are places in which it seems possible for infection to occur. J. Watt (1933) has shown that in a large sanatorium during the last large epidemic (1933) of influenza, though his staff had an attack-rate of 25 per cent., the patients in open-air conditions only had an attack-rate of 1 per cent. The two groups of course are not really comparable. Panel and floor heating could make such a school not only possible but even comfortable. "We are gradually realising," says M. D. Horst (1927), "the inefficiency of our system of indoor education with its sequelæ in the form of school infection." It seems particularly important to prevent influenza not only as the disease which causes the greatest loss of school-time but also because an attack gives no immunity.

Measles.—Measles is another disease which can scarcely be termed "preventable" in schools. Convalescent or adult serum can be used in hospital wards to postpone attack or to modify attack when the date of infection is accurately known. But this date of infection is hardly ever accurately known in schools, which makes even the modification of attack exceedingly difficult. With healthy children, a modified attack which confers a lasting immunity should be our aim. Postponement by the agency of evanescent passive immunity is useless in schools for healthy children.

Prevention of Complications.—I have been talking of two unpreventable diseases instead of sticking to my title. Why? Because influenza and measles owe their worst terrors to their complications, which are almost always due to secondary infections by hæmolytic streptococci and, less commonly, pneumococci, and we can do much to prevent these secondary infections.

First, we must try to keep down the carrier-rate of hæmolytic streptococci. Even in non-epidemic

times, if throat swabs be taken from any sample of the general population, a considerable proportion will usually be found to be carrying hæmolytic streptococci. In a residential school we must not be surprised to find 10 to 15 per cent. carrying. So that you will understand why I spoke of the *limitation* of infection rather than of its total exclusion. The importance of keeping carrier-rates low is twofold, for as in the case of other infections, high carrier-rates of hæmolytic streptococci (say, 30 per cent. and over) mean not only a numerical increase of carriers but an increase in the proportion of profuse carriers—those whose swabs will give an almost pure culture of the organism. These are much more dangerous then sparse carriers. Both these factors inherent in a high carrier-rate increase the dosage of infection.

The tendency to high carrier-rates can be met, first, by the prompt isolation of every pupil with the slightest catarrh or sore-throat, and, secondly, by the strictest ventilation and spacing of all rooms, remembering also that the domestic staff, if overcrowded or badly housed, may form a source or reservoir of infection. Of dormitory infection I will speak later.

Dangers of Overcrowding.—Even more important are the precautions with regard to the actual patients with measles or influenza. The first cases are, of course, sent to the sanatorium. This probably has beds for some 10 per cent. of the school population. If the epidemic be large, this accommodation is inevitably insufficient. There is usually a particularly dangerous period when you are tempted to wonder whether, by squeezing in an extra bed or two, you can manage without adapting some ordinary dormitories for use as sick-rooms. Resist the temptation. The slightest overcrowding of patients in a measles epidemic is literally a deadly sin. Such patients, if crowded together, run a greatly increased risk of serious complications, due to pneumococcal or streptococcal infections, and should therefore be nursed in beds separated by a far greater interval than the three-feet space desirable for healthy boys sleeping in the ordinary dormitory. So, if it be decided to use an ordinary dormitory as a ward for pupils suffering from measles or influenza, remove half the beds used when the room is an ordinary dormitory, or leave them unoccupied, so that one unoccupied bed intervenes between any two occupied beds. This (if the dormitory beds are properly spaced in normal times) will give the proper nine-foot interval between the edges of beds used for infectious cases.

Measles, with its copious catarrh and incessant cough, has a "spraying" power unequalled in disease. If one measles patient be a carrier of hæmolytic streptococci he speedily passes this secondary infection to his neighbour in the ward, unless that neighbour be protected from him by sufficient space (such as the nine-feet interval between beds, which is the minimum standard of the Ministry of Health for infectious diseases hospitals). Boys who show any clinical signs of secondary infection with hæmolytic streptococci (such as earache, otorrhœa, or adenitis) should be immediately removed from a general measles ward and nursed in a special ward or, better still, in separate rooms.

The same probably holds for pneumonia. The spraying capacity of the measles patient who happens to be a carrier of virulent pneumococci is increased, whilst the resistance of the recipient has been lowered by his own attack of measles. B. A. Peters (1931) has recently demonstrated the danger of nursing complicated cases of measles in large wards. Debré and Joannon (1926) say: "Collective isolation, without individual isolation, is disastrous for measles patients, who should be placed in completely independent cubicles. . . . Complicated and uncomplicated cases should be nursed in separate quarters."

Completely isolated cubicles are an ideal which is probably unobtainable in a school sanatorium, but bed isolation by the sufficient standard of space previously mentioned should be attained.

TONSILLITIS

Tonsillitis is the cause of much sickness in schools, 12 per cent. per annum of a school population usually being admitted to sanatorium for tonsillitis or sore-throat. In epidemics the attack-rate may be very high. C. Haig-Brown, for example, in 1884 recorded an attack-rate of 63 per cent. in one autumn term in one house of Charterhouse School, 34 out of 54 boys being attacked, though the housemaster, his family, and 11 servants all escaped. An attack-rate of tonsillitis from 20 to 30 per cent. in one term is by no means uncommon.

Long the cinderella of diseases, tonsillitis has suddenly assumed a new importance. The work of J. Smith, of Aberdeen (1931), and others has shown how often it is the parent of puerperal fever, whilst Collis and Sheldon (1931), and A. F. Coburn in America (1931) have observed that the disease appears to have a direct causal relationship with acute rheumatism. Its intimate connexion with scarlet fever has long been known, and it now seems probable from the serological work of F. Griffith (1926, 1928, 1930) and others that acute tonsillitis and scarlatina, apart from the presence of a rash and the greater risk of nephritis in the latter, are almost identical conditions both bacteriologically and epidemiologically. So intimate indeed is the connexion that we may say that acute tonsillitis is the Mr. Hyde, the furtive other self of that brilliant Dr. Jekyll of disease, scarlet fever.

Acute tonsillitis is nearly always due to infection with hæmolytic streptococci (*Str. pyogenes*). An infection of throat with hæmolytic streptococci may produce varying clinical pictures in different persons, such as (1) healthy carrier state, (2) feverish pharyngitis and rhinitis without noticeable sore-throat, (3) tonsillitis, (4) scarlet fever; in exceptional circumstances, (2), (3), and (4) may be followed by otitis media or by acute rheumatism. I have explained that the hæmolytic streptococcus is almost always found in the throats of a proportion of healthy persons anywhere, its incidence varying with the locality, the season, and the hygienic circumstances of the community examined. W. W. C. Topley (1930) showed that in healthy persons living under different housing conditions in Manchester the monthly percentages of carriers of hæmolytic streptococcus ranged from 36 per cent. in November, 1925, corresponding with a period of high incidence of scarlet fever in the city, to zero in October, 1926.

In plate cultures of throat swabs taken from patients with acute tonsillitis, hæmolytic streptococci are almost invariably found in profuse or even in pure culture. In the earliest stages of scarlet fever they can be grown from throat swabs in from 90 to 100 per cent. of cases. They often multiply in the throat in measles, and are obtained from the ear discharge in at least 70 per cent. of all cases of otitis media. Some of the common ailments among school boys, such as febricula, feverish cold, nasopharyngeal catarrh, or influenza, especially when these occur during outbreaks of tonsillitis or scarlet fever, are associated with the presence of hæmolytic streptococci in the throat, although the sore-throat symptom is often absent.

Epidemics of measles and influenza increase the spread of hæmolytic streptococci in schools, even

when these have good hygienic conditions, but in addition two things must be remembered: (1) that epidemics of tonsillitis or the occurrence of "dropping" cases of scarlet fever or otitis media in schools are generally associated with a high carrier-rate of hæmolytic streptococci; (2) that epidemics of tonsillitis and high carrier-rates of hæmolytic streptococci are usually signs of the existence of environmental conditions which favour a rapid and easy transmission of infection.

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(To be concluded)

SPECIAL ARTICLES

MEDICINE AND THE LAW

Unregistered Practitioners and Diabetes Insipidus

AT a Warrington inquest, which began on Nov. 1st, Mr. S. Brighouse, the coroner, explained to the jury that he had been notified of the death by a document bearing the printed heading "C. C. Abbott, physio-medical practitioner," which stated that the deceased (a woman aged 43) had been suffering from diabetes insipidus for the past seven years. "The cause of death," concluded the document, "to the best of my knowledge is (1) diabetes insipidus, (2) inanition through heart failure"; then followed the signature of Mr. Abbott. No date of death was given and the signature was not that of a duly qualified doctor; the coroner therefore asked the police to make inquiries, and he directed a post-mortem examination at which Mr. Abbott was present. At the inquest Dr. W. E. Cooke, pathologist to the Wigan and Leigh Infirmaries, described the results of this examination. The dead woman's body was emaciated; the liver was enlarged and showed fatty degeneration, probably due to prolonged poisoning; in Dr. Cooke's opinion the cause of death was heart failure due to pulmonary tuberculosis. The father of the deceased said Mr. Abbott began to treat the patient six or seven years ago, and during her last illness had given her medicine and pills; the father had been told by Mr. Abbott that the treatment was chiefly for diabetes; tuberculosis was never mentioned; he himself thought Mr. Abbott was right because his daughter drank "a tremendous amount of liquid, chiefly water."

Dr. Cooke's evidence dealt as follows with Mr. Abbott's diagnosis. He was prepared to say absolutely that the patient never suffered from diabetes insipidus; this was a rare disease but it could easily be diagnosed during the patient's life. She had been treated for a disease she never had. It should have been apparent to anyone—without a medical examination—that she was suffering from tuberculosis. Had she been treated for tuberculosis she might have been cured; she would certainly have been living. Mr. Abbott, in the course of cross-examining Dr. Cooke, said "I still maintain to-day that my diagnosis is correct; I do not alter my diagnosis in spite of what Dr. Cooke has said." Mr. Abbott tendered himself as a witness, and the inquest was at first adjourned for a week in order to give him an opportunity to prepare his evidence. Owing to the illness of the coroner the adjournment is at present continued indefinitely.

Effect of Conviction for Manslaughter

A medical practitioner was convicted of manslaughter at the recent assizes at Newcastle; he had so driven his motor-car as to cause the death of a man on the road. His defence was that he had been working hard and had become drowsy at the wheel. There was no suggestion that he was under the influence of drink. The case against him, as put by Mr. Justice Travers Humphreys when passing sentence, was that he had found himself driving his car at 40 miles an hour on the wrong side of the road and had realised that it was because he had fallen asleep; he had nevertheless continued to drive at the same speed, and his recklessness in this respect had caused death. The sentence was a fine of £100 with costs. During his address to the jury for the defence Sir Henry Curtis Bennett, K.C., had dwelt on the "nearly fatal" effect of a conviction upon the doctor's professional career. The judge expressed himself, in passing sentence, as anxious to take no course which might have the effect of indicating to the General Medical Council his opinion that the defendant doctor was unfit to practise his profession. The Council, of course, have a statutory discretion. In cases of conviction for felony or misdemeanour the Medical Act declares that the Council "may, if they see fit," direct that the name be erased from the register. Judicial decisions in plenty declare that the exercise of this discretion is the responsibility of the Council alone. The judge indicated what he himself thought of the case at Newcastle, when he imposed a fine rather than a sentence of imprisonment after a verdict of manslaughter.

Dye Dermatitis

In the recent claim in the High Court for damages for dermatitis, contracted through the wearing of a piece of imitation astrakhan trimming, the plaintiff successfully surmounted the two main difficulties which arise in such cases. She had first to establish that the skin affection from which she suffered was caused by the trimming sold to her by the defendants. On this point Mr. Justice Goddard declared himself satisfied by the evidence of Dr. W. J. O'Donovan, whom he praised as a careful and fair-minded witness. The judge was impressed by the fact that the trimming material had been fashioned into a neck-wrap, worn so that it touched the open neck in front but not at the back. On the day after it was first worn a red spot, the size of a two-shilling piece, appeared on the outside of the throat, and the rash spread over the throat and upper part of the chest but did not attack the back of the neck. Dr. O'Donovan definitely stated that it was a case of dye dermatitis, and this the judge accepted—although experts, who had analysed parts of the neck-wrap for toxic substances, said their results were negative. The second point which the plaintiff had to establish was the absence of special idiosyncrasy. If she belonged to the class which Dr. O'Donovan compendiously described as "dermatological bad bargains," so that a substance was toxic to her which would not be toxic to ordinary human beings, then she would not have been entitled to succeed. The judge was satisfied that the plaintiff had not any such "personal, peculiar un-uniformity." Mere hypersensitiveness on the part of the plaintiff, it seems, would not have excused the defendants. If a shop sells trimming which is toxic to a sensitive person, the sensitiveness cannot be relied upon as a shield against liability. Goddard, J., who was

trying the case under the "new procedure" rules without a jury, found as a fact that the plaintiff was not idiosyncratic nor even hypersensitive, and that she suffered from dye dermatitis. He awarded £22 11*s.* for the special damage she had incurred, and £150 damages as compensation for "a very painful and irritating complaint." Certain legal issues remain to be decided, since the actual sellers of the trimming claim to be indemnified by the wholesalers, who in turn claim indemnity from the manufacturers. The chain of liability may extend even further back to the dyers of the material and to Imperial Chemical Industries, Ltd., the manufacturers of the dye; the judge described it as an unusually protracted legal version of the House that Jack built. The question whether the fault was in the material itself or in the dye, though it will interest the parties to these indemnities, will not matter to the plaintiff. She has established a right important to ladies who go shopping. When they buy one and a half yards of imitation astrakhan trimming they do not want to purchase dermatitis as well.

IMPERIAL CANCER RESEARCH FUND

THE YEAR'S WORK

Dr. J. A. Murray, F.R.S., in his report notes that the work of the laboratory during the past year has been for the most part in continuation of the investigations recorded in the Tenth Scientific Report.[1] Interim accounts have since been published of some of the work on the action of radium on cancer cells, on the behaviour of normal and malignant cells in tissue culture, and on tar carcinogenesis. Publications from the laboratory during the year include also contributions to the discussion on the experimental production of malignant tumours held by the Royal Society in June. Dr. Murray was invited to open the discussion by defining its scope and surveying the principal features of the problems involved; his summary was published in THE LANCET of June 17th, 1933, p. 1301.

THE ACTION OF RADIUM ON CANCER CELLS

The results of the investigations by Mr. H. G. Crabtree and Dr. W. Cramer on the action of radium on cancer cells are of great interest and reveal an unsuspected complexity in the phenomenon of radiosensitivity.

In order to study the effects of various inhibitors of metabolism on the vital processes and viability of cancer cells, it was necessary first to determine the limiting concentrations and time of application of the substances used, which still permitted complete recovery. In the course of this work, which was discussed in THE LANCET of Sept. 9th, p. 600, remarkable differences were observed between the mode of action of hydrocyanic acid and that of iodo-acetic acid or sodium fluoride.

A clear distinction must be drawn between a diminution in metabolism from which complete recovery is possible, such as follows exposure to hydrocyanic acid in concentrations up to M/20, and a diminution in metabolism which is due to a poisoning of the cell, and which is, therefore, irreversible. Only the former can be described truly as an inhibition of metabolism. The toxic action of sodium fluoride and iodo-acetic acid in certain concentrations has not been taken sufficiently into account in previous work.

The problem of radiosensitivity of the cancer cell was seen to be bound up with the physiological activity of the respiratory mechanism but not with that of the glycolytic mechanism. If applied to the practical problem of radiotherapy this meant that the radiosensitivity of a given malignant cell was not a fixed property; and that the radiosensitivity of a malignant tumour was not necessarily homogeneous throughout the tumour, but was the resultant of a variety of largely independent modifying factors which might vary in different parts of the growth. The well-known fact that badly vascularised tumours were radio-resistant found an explanation in the observation that anaerobiosis made a cancer cell less radiosensitive.

[1] See THE LANCET, 1932, ii., 860.

TISSUE CULTURE

Mr. R. J. Ludford, D.Sc., has continued his work on the behaviour of normal and malignant cells in tissue culture in solid and liquid media. Vital staining by trypan-blue permitted a clear distinction to be made between the tumour cells, carcinoma and sarcoma, which do not segregate the dye, and the non-malignant associated cells which do. Only non-malignant cells were observed to emigrate from the tissue fragment in liquid media; both malignant and normal cells emigrate when a plasma medium is used. The distinction between normal and malignant cells by these methods is not absolute, but is in part an individual peculiarity of the strain of tumour employed.

TAR CARCINOGENESIS

Mr. A. F. Watson, D.Sc., has carried out experiments on the influence on tar carcinogenesis in mice of the addition of fresh ox or horse liver to the diet. A greater proportion of the animals develop tar tumours, and they appear earlier than in the control series on the unsupplemented laboratory diet. The fresh liver need not be given throughout the whole period of tarring; the effect is obtained if the animals are kept on the unsupplemented diet for the first one or two months. This result contrasts with the absence of effect on carcinogenesis of the specific dietary variations which have previously been tried. The experiments are being extended to other species than the mouse.

CLINICAL RESEARCH

The grant from the Fund to Dr. A. T. Todd, of Bristol, in connexion with his researches on the treatment of inoperable cases of malignant disease with a combination of colloids and radiation, is employed in part payment of the salary of a biochemist, Miss Keyser. She is at present testing colloids for toxicity and purifying the gum arabic used as a stabiliser for colloids. In addition she is carrying out routine estimations of various blood constituents, from which it is hoped indications of the reactions of patients to the treatment may be obtained. These estimations are of necessity largely empirical in their preliminary stages and include determinations of pH, calcium, magnesium, and potassium in the blood-serum and fluid from standard blisters. Blood lipase estimations are also done systematically. The glutathione estimations, which were in progress earlier, have given no useful indications and have been discontinued.

Annual Meeting

At the annual meeting held on Nov. 16th, with the Duke of Bedford in the chair, Sir Humphry Rolleston, chairman of the executive committee, summarised the year's work and spoke of the cordial and close relations maintained with other workers and institutions.

The president made sympathetic reference to the loss sustained by the Fund in the death of four prominent members of the Fund, Sir William Watson Cheyne, Sir Frederick Andrewes, Sir Percy Sargent, and Sir George Makins. Sir Frederic Hallett, the first secretary of the Fund, who had been largely instrumental in drawing up its constitution, and had devoted all his energies during his 30 years of office to placing the Fund on a sound administrative and economic basis, had been made a vice-president on his retirement in November, 1932. His interest in the Fund remained keen in spite of failing health until his death in February, 1933, and his advice was constantly at the disposal both of the director and of Mrs. Félice Harvey, who succeeded him as secretary.

Sir Holburt Waring had consented to succeed

Sir Percy Sargent as joint honorary treasurer with Sir George Makins, and would now be sole honorary treasurer. The president drew attention to the fact that during the 12 years of office of Sir George Makins the capital of the Fund had increased from £154,016 to £244,660, and the endowment fund from £16,000 to £62,590.

The establishment of the Miss Elizabeth Wills Allen research fellowship was particularly welcome, since Lord Atholstan's gift of £2000 for ten years came to an end last year.

The income from investments did not suffice to cover ordinary expenditure, which this year exceeded fixed income by £4788.

AUSTRALIA

(FROM OUR OWN CORRESPONDENT)

THE NEW SOUTH WALES HOSPITAL LOTTERY

THE New South Wales lottery was instituted for the purpose of aiding the public hospitals of New South Wales and maintaining the large monetary grants contributed annually by the government towards the upkeep of almost all the hospitals of the State, which grants were in danger of being seriously curtailed. In this maintenance of funds the lottery has been most successful. Its evolution has been not without interest from other aspects. It is still being violently opposed by most of the churches. At the time of the inception of the lottery this opposition was countered by a proposal from the then premier of the State, Mr. Lang, to withhold the lottery if those opposing it would provide an alternative. A church and state appeal was made, but failed completely and the lottery was then instituted. It is well-known that the present premier, Mr. Stevens, is opposed to the lottery but that his view is not shared by many of his Cabinet and in particular by the Minister for Health, Mr. Weaver, who has been most active in defence of the lottery. It is also known that many of the Cabinet, although against the lottery on moral grounds, realise that the increase in taxation, which its abolition would entail, would at the present time be very bad politics. The net result of the conflicting views, however, has been a considerable restriction of the activities of the director of the lottery; tickets are now limited to 5*s*. 3*d*. each, £1 lotteries are not allowed and the lottery is not advertised as formerly. Prior to the inception of the New South Wales lottery, the Government lottery of Queensland, and other lotteries received large sums of money yearly from New South Wales. These suffered very considerably when the New South Wales with its larger population became a competitor. Taking advantage of the restrictions fettering the New South Wales lottery, within the last few months the Queensland Golden Casket has held four large lotteries of £1 each and a fifth is in process of being held. It is estimated that at least from £40,000 to £60,000 in each of these lotteries has been subscribed from New South Wales and a distinct falling off has been evident in the subscriptions to its own lottery. This has given considerable anxiety to the Minister for Health and others, and demands have been made that the restrictions should be removed from the New South Wales lottery so that it may be able to withstand the competition. Statements have been issued in the press strongly defending the lottery on the grounds of expediency and urging that since it is much less likely to cause ruin to the public than betting and horse racing, these, which contributed much less to good objects, should first be eliminated.

Another aspect of the lottery, which is causing concern is the number of lottery shops which have sprung up. These sell one-seventh share in a ticket for a shilling, thus making a profit of 1*s*. 9*d*. on each ticket. It is estimated that at least £100,000 a year is lost to the lottery in this way. An attempt was made to prevent this practice, but on an appeal to the Courts, it was upheld as being perfectly legal. It is stated to be the intention of the State Parliament at its next sitting to declare the sale of share tickets in this way illegal and also to prohibit the gift of shares in lottery tickets as bonuses to those buying goods in shops, at present a common practice.

Within the last week, a definite pronouncement by the New South Wales Cabinet would seem to indicate that the view of the Minister for Health has prevailed as it has been announced that the Government cannot see its way clear to abolish the lottery until an effective and equable substitute is suggested, and further that it is intended to run a number of £1 lotteries of 100,000 or even a greater number of tickets.

AN ARCHITECT'S SANATORIUM

A SANATORIUM of remarkable design, which has been built at Paimio in south-west Finland, is described by Mr. P. Morton Shand in the *Architectural Review* for September. It has a central axis with radiating wings of different lengths which are aptly compared to the spokes of a badly broken wheel. Each wing has a different unit of construction, according to its exposure and its function, and the result is a group that gives the impression of having been planned from inside outwards.

The central block—or axis of the wheel—contains the staircases and lifts. From this projects, as one spoke, the main block (Fig. 1). Here the standard unit is the two-patient ward, whose requirements indicated a south-south-east exposure, so that the full morning sun might shine in on the beds of the patients, and the afternoon sun on the upper part of their windows. Here there are also solariums, which face due south.

The construction of the balconies is illustrated in Fig. 2, which represents a cross-section of one of the wings. The balconies are cantilevered one above the other on to a central column, and thus all obstructing pillars and supports are eliminated so that nothing intervenes between the patient, the wind, the sun, and the countryside (Fig. 3). A second wing contains the doctors' quarters, clinics, operating theatre, administration and common-rooms for the patients. The public rooms have been arranged so that they are never all in full sunshine at the same time; and a different view is commanded by each. Most of the rooms have higher south than north sides to allow the sunshine to penetrate to their remotest coners. Wherever possible the central corridor system has been avoided and side corridors have been used. Only one wing, which runs north by south and houses the laundry, store-rooms, bakery and kitchen, while also providing accommodation for the nursing staff, has rooms facing both ways. The power-house forms the fifth block, and its bunkers are connected with the railway siding by means of a tunnel. At some distance from these five wings stand two small groups of houses which will be used by the officials and employees.

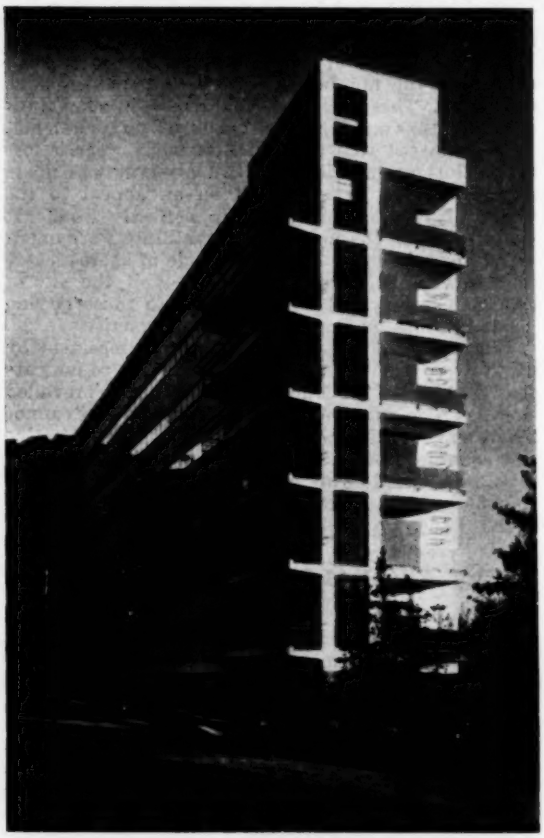

FIG. 1.—End-on view of the main block, containing two-patient wards, and solarium lying halls facing due south. The horizontal strips of windows light the side corridors.

One of the most interesting features of the sanatorium is the emphasis everywhere laid on the mental needs of the patient. The architect considers that his first duty is to preserve the "psyche" of the individual, and an example of his care is to be seen in the arrangement of the lying halls. There is a large roof garden for recently arrived and less infectious cases (120 patients to be arranged in groups of 20) and small solariums in direct communication with the divisional corridors are designed for those who are weaker and more infectious (24 patients arranged in groups of 4). Provision has also been made to carry out this grouping plan in other parts of the institution. The idea is that each group should be selected by the medical administration so as to create a different atmosphere. It is suggested that a patient would thus always be able to find congenial company and to obtain mental change by transference from group to group. The architect, who seems to have found his inspiration in a certain mistrust of experts, says "The idea, it is perhaps hardly necessary to add, was an architect's, not a doctor's. The doctors fail to understand it. Whether the medical profession will end by adopting it remains to be seen."

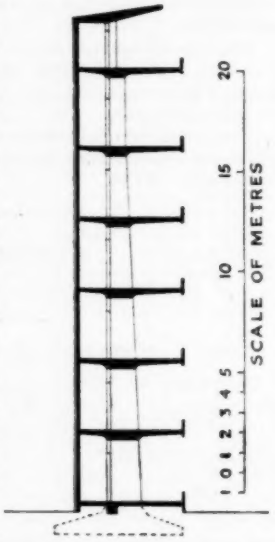

FIG. 2.—Diagram to show the construction of one of the wings. On the right, or sunny side, are the balconies. On the left there are no windows at all.

Further signs of the thought that has been given to the welfare of the patient are to be seen in the two-room wards themselves. These rooms have double windows reaching to within 40 centimetres of the floor, and are heated by means of low-temperature ceiling panels, which are said to give a very even distribution of heat, especially to persons in a recumbent position. Experiments have also been made with some new zinc radiators. Three of the

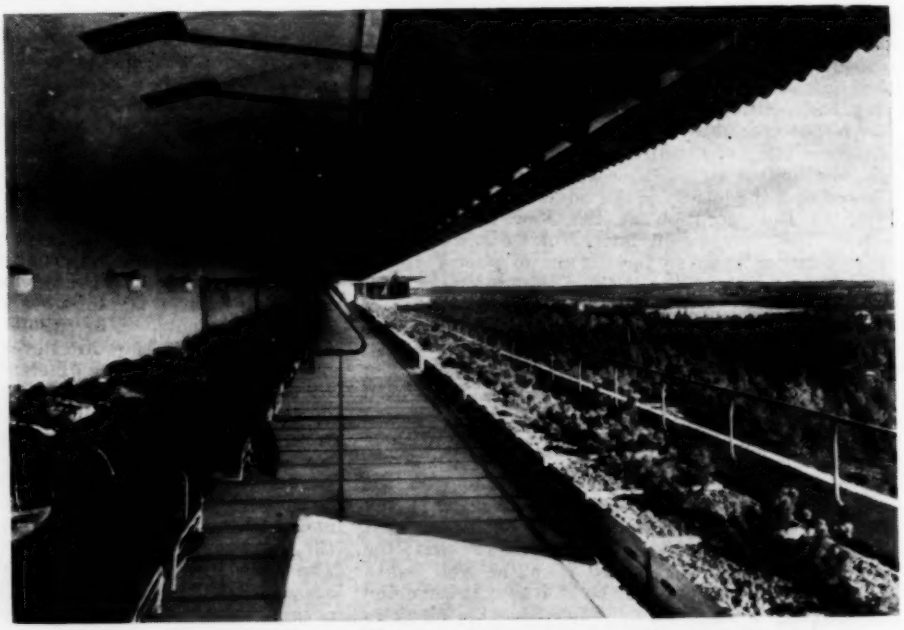

FIG. 3.—Solarium balcony on the top floor of the main block. The patients have separate flower boxes, and are encouraged to grow their own plants.

walls of the room are hard and one soft, and by this means better acoustics are achieved. All walls are enamelled in rather dull colours with the ceilings in darker tones. Another practical arrangement for the patient's comfort is the provision of special wash-basins, one for each patient; the water falls into the basin at an angle of 30° and there is no splashing. By means of shafts all plumbing and electric fixtures may be adjusted from the corridor, and no workman need enter a patient's room. The kitchen has been designed as one large room with hanging glass screens which prevent the smell of cooking from spreading and make supervision very easy.

On the wall of the doctors' common-room is a floor-plan of the wards which shows where every patient is to be found.

The sanatorium has cost about £107,000 and accommodates 290 patients. The architect is Alvar Aalto, who, with his wife, has specially designed all the furniture in it. Examples of this furniture may be seen at the exhibition of plywood furniture now open at Messrs. Fortnum and Mason, 181, Piccadilly, W.

The accompanying photographs are reproduced by courtesy of Mr. Morton Shand. Others may be found in the *Architectural Review*, from which Fig. 2 is taken, and in the *Listener* of Nov. 15th.

PUBLIC HEALTH SERVICES

Health in an Industrialised Community: a Sanitary Retrospect of Newcastle-on-Tyne

ONE of the few statutory obligations placed upon a medical officer of health is the preparation and submission of an annual report to his local authority and the Minister of Health in a form prescribed by the latter. Throughout the second half of the nineteenth century, when the earliest of these officials were feeling their way and the range of their activities was less extensive than it now is, their reports were often vivid documents, reminiscent of the writings of the first factory inspectors. Nowadays, the issue of the annual report is not the great event of the year but merely an incident in the work of a busy health department. It has become more or less impersonal and is apt, as Dr. Duncan Forbes of Brighton bluntly remarks in his report for 1932, to be "taken up with dry statistics of little interest to the casual reader." Apart from the burden of the manifold activities of the present-day medical officer, the explanation of this desiccation is partly to be found in standardisation brought about by the requirements of the Minister. Each year he asks every local authority to instruct its medical officer of health to prepare his report under a number of headings which run to nearly seven pages of closely printed foolscap. When these instructions have been complied with, and regard for a reasonable measure of economy is observed, there is little room left for the sort of writing which helps the local authority and the public to a comprehensive understanding of the methods and aims of public health administration. In most of the reports a brief prefatory note is all that the writer allows himself for this purpose.

An exception is to be found in the first annual report of Dr. J. A. Charles, who succeeded the late Prof. Harold Kerr as medical officer of health for Newcastle-upon-Tyne towards the end of 1932; nearly a quarter of his report is devoted to a historical survey of the sanitary circumstances of the area. Newcastle was not one of the towns which took early advantage of the powers given by the Public Health Act, 1848, and even in 1873, when the late Dr. H. E. Armstrong was appointed as its first medical officer of health, there were those who openly expressed the view that "the appointment would be of no more use to the town than an umbrella to a duck." This scepticism—or interested opposition—persisted not from lack of evidence. It is true that the commissioner sent to Newcastle by the Health of Towns Commission in 1845 appears to have taken rather a conservative view of his functions and, while stressing the lack of sewerage and proper water-supply, accepted the opinion of some of his informants that "the town of Newcastle ought not to be considered by any means unhealthy." The statistics for the year 1846 are an interesting commentary, for the deaths exceeded the births by 226—and this exceptional occurrence was not due to a low birth-rate. Cholera ravaged the town in that year and again in 1853, when there were 1500 deaths from this cause. Then came the Cholera Commission of 1854 with John Simon as their medical colleague. They swept aside prejudiced evidence and saw for themselves the dreadful squalor and overcrowding in which the people lived. Their report was apparently unwelcome, but a recurrence of cholera in 1865 led to the abandonment of the polluted Tyne as a source of water-supply and the water-carriage system of sewage disposal was gradually introduced.

But, if there were reactionaries in the seats of authority, Newcastle seems to have been fortunate in some of its citizens and especially in its medical men. On the initiative of the local medical society, a public health committee of inquiry was set up consisting of members of that body, of the council, and of the board of guardians. Dr. Charles describes their "Report of the Public Health during the year 1866" as a masterpiece of frank criticism and diligent research. They pointed out that 39 per cent. of the people were living in one- or two-roomed dwellings, and gave the numbers of such houses without any water-supply or privy accommodation whatever. For instance, houses of this type, with 4171 rooms and 13,747 inhabitants, neither possessed nor shared a water-closet or privy. The deaths from scarlet fever were estimated at 500, in a population of about 122,000, and 104 persons died of what appear to have been diseases of the enteric group. The crude death-rate from all causes was 32·4 per 1000. The rate of infant mortality per 1000 births was 191 and it was estimated that of every 100 children born only 61 survived to complete the first five years of life. This committee issued recommendations to the council, to the guardians, and to the citizens of all classes, which appear to have been almost as comprehensive as those subsequently made to the Government by the Royal Commission of 1869. Needless to say, they were not promptly acted upon, but the appointment of a medical officer of health—one of their recommendations—in 1873 saw the beginning of better things.

Much of the rest of Dr. Charles's report is devoted to recording and illustrating the subsequent improvements in the public health. For instance, the death-rate fell from 28·8 per 1000 in the quinquennium ended 1875 to 12·9 in that ended 1930. The corresponding fall in infant mortality was 191 to 83; for the zymotic diseases 5·0 to 0·7; for all forms of tuberculosis 2·18 to 1·09. These results have been

brought about in spite of the persistence of those evil conditions of housing which are characteristic of the northern towns. At the census of 1931, one or two rooms still provided the sole accommodation of 29 per cent. of the population, and 23·3 per cent. of the population were still living under overcrowded conditions as measured by the standard of more than two persons to a room. There were 117 families living eight or more in one room, and 834 families, consisting of eight or more persons, living in two-roomed houses. Schemes in hand or projected in the five-years housing programme will remove and rehouse 20,139 persons, but at least 43,000 will remain in unsatisfactory conditions. Perhaps because of this overcrowding, the mortality from measles, whooping-cough, diarrhœa, tuberculosis, and pneumonia compares unfavourably with that of the rest of the country. The outspoken reports of the past which Dr. Charles quotes, his own retrospect and surveys, such as that conducted recently by Dr. F. C. S. Bradbury into tuberculosis in Tyneside, ensure that the council and the people of this area are being left in no doubt as to the facts. The medical mind, on the other hand, will harbour a doubt as to the element which herd-immunity has formed in the reduction of disease in towns like Newcastle and, consequently, as to the prospect of further improvement in health by reform of environmental circumstances. The history of rehousing in Dagenham and Stockton-on-Tees suggests that preventive medicine may find new fields of effort in new surroundings, unforeseen by the sanitarians of last century who were struggling to overcome the faults of the industrial revolution, and the fruits of whose labours many towns, like Newcastle, are only now beginning to enjoy.

The One-pipe System of House Drainage

In his contribution to the Bossom symposium, held in London last Tuesday under the Chadwick Trust, Dr. Charles Porter, M.O.H. for Marylebone, showed that in all probability the so-called one-pipe system was the only system in the early days of sanitation. Later, when defective drainage was found to be responsible for outbreaks of enteric and other fevers, schemes were devised which sought to keep drain emanations from entering buildings by insisting that drains should as far as possible be outside the premises, that the different classes of wastes should be kept separate, and that a complete and complicated scheme of trapping should be employed. In this way there grew up what he described as the British standard multiple pipe system. With increased demand for sanitary appliances of all sorts, especially in flats and hotels, this system, however, had become inapplicable, and to-day hardly anywhere but in Britain was anything but the one-pipe system or some modification of it seen in hotels and flats and even ordinary dwelling-houses. In London the L.C.C. had in course of preparation by-laws approving its introduction, and already certain London borough councils, conspicuously that of Marylebone, had waived existing requirements and permitted the adoption of the scheme for hotels and large blocks of flats. From the point of view of hygiene there is no doubt in Dr. Porter's opinion that the system has advantages, and on grounds of economy it has very real claims also.

The subject was discussed from the technical and practical side by Mr. W. H. Draper, sanitary inspector for Marylebone.

INFECTIOUS DISEASE

IN ENGLAND AND WALES DURING THE WEEK ENDED NOV. 11TH, 1933

Notifications.—The following cases of infectious disease were notified during the week: Small-pox, 1 (last week 1); scarlet fever, 4272; diphtheria, 1277; enteric fever, 35; acute pneumonia (primary or influenzal), 889; puerperal fever, 38; puerperal pyrexia, 109; cerebro-spinal fever, 10; acute poliomyelitis, 14; acute polio-encephalitis, 1; encephalitis lethargica, 5; dysentery, 14; ophthalmia neonatorum, 62. No case of cholera, plague, or typhus fever was notified during the week.

The number of cases in the Infectious Hospitals of the London County Council on Nov. 14–15th was as follows: Small-pox, 3; scarlet fever, 3388; diphtheria, 2058; enteric fever, 22; measles, 398; whooping-cough, 122; puerperal fever, 21 mothers (plus 3 babies); encephalitis lethargica, 255; poliomyelitis, 5; "other diseases," 175. At St. Margaret's Hospital there were 13 babies (plus 4 mothers) with ophthalmia neonatorum.

Deaths.—In 118 great towns, including London, there was no death from small-pox or enteric fever, 10 (2) from measles, 12 (3) from scarlet fever, 13 (4) from whooping-cough, 43(6) from diphtheria, 57 (12) from diarrhœa and enteritis under 2 years, and 54 (17) from influenza. The figures in parentheses are those for London itself.

Of the deaths from diarrhœa, 6 occurred at Birmingham, 3 each at Leeds and Liverpool. Liverpool also reported 4 fatal cases of measles, Barrow-in-Furness 2. Of the deaths from diphtheria, 5 were reported from Liverpool, 4 from Manchester. Eight deaths at Birmingham were attributed to influenza, 3 each at Liverpool, Salford, and Rhondda.

The number of stillbirths notified during the week was 229 (corresponding to a rate of 40 per 1000 total births), including 40 in London.

PANEL AND CONTRACT PRACTICE

A Domiciliary Medical Service

Newcastle-upon-Tyne City Council has been considering for some time the establishment of an open panel system for the provision of domiciliary medical services. The scheme was initiated by the late Prof. Harold Kerr, then medical officer of health, and before it was finally accepted by the Ministry of Health prolonged discussions were necessary. It was only on Nov. 8th that it became effective for a trial period of one year. The transition necessitated an approach to over 8000 persons in receipt of relief, with a view to ascertaining whether they were receiving medical relief and, if so, the name of the practitioner selected by them on the new panel. In all, nearly 900 persons on medical relief were allocated according to their wishes amongst the 49 medical practitioners who had accepted service on the panel.

The scheme is to be introduced at present in the six of the ten poor-law districts in which the appointment of district medical officer has become vacant; in the other districts only when a vacancy occurs. The practitioner's contract will place an obligation on him to perform duties similar to those placed on a district medical officer by the Mental Treatment Act and Lunacy Acts (1890–1930), the Mental Treatment Rules (1930), the Poor-law Act (1930), or the Public Assistance Order (1930). His contract will be terminable on three months' notice by either party. Payment will be made from a pool consisting of an amount equivalent to the

salaries, bonuses, emoluments, &c., for the year ended March 31st, 1930, amounting to £1200 for the districts concerned. The health committee will undertake the provision and dispensing of medicines at the public dispensary and the general hospital; emergency medicines dispensed by practitioners at hours when these are not open are to be paid for on an agreed scale. The total annual cost of the scheme is estimated at £2234 made up of medical officers' salaries (£1200), extra fees for special cases (£50), Newcastle Dispensary (£834), and Newcastle General Hospital (£150).

In regard to the issue of medical extras the practitioner on the public assistance panel is warned that the legal position is as follows:—

> The medical practitioner is not empowered to order food or articles of diet as meat, fish, milk, cream, eggs, stout, &c., for patients in receipt of public assistance. Any direction that he may give to that effect will only amount to an expression of opinion on his part, that relief in food or other necessaries is required. The power of granting relief rests with the public assistance committee, and in case of sudden and urgent necessity with the relieving officer, and any certificate given by the medical practitioner for the allowance of extra nourishment to any of his patients can only be regarded as a recommendation or statement of his opinion as to what is required.

Medical practitioners are requested only to recommend medical extras in very special circumstances. When it is considered advisable that some addition should be made to the dietary of the patient, they are asked to consider whether this cannot be done by suggesting the issue of one or other of the following: (1) extract of cod-liver oil and malt; (2) cod-liver oil emulsion; and in particular cases (3) milk.

Clearance of Lists

The panel committee for London has received intimation from the clerk of the insurance committee that, as all practitioners' lists are or will be cleared before the end of this year, Jan. 1st, 1934, should be fixed as the date from which such clearance should be made effective. In the early days of national health insurance it often happened that facts which should have been brought to the notice of a committee about an insured person were either never notified or only notified so tardily that many practitioners had on their lists the names of persons long dead, or who had moved elsewhere, or who had changed their name on marriage and thus became insured in another capacity. As a result a practitioner might have 100 redundant names on his panel list of 1000. As this inflation affected all practitioners alike, it did not act unfairly as between doctor and doctor in a particular area. The figures were, however, definitely incorrect, and it was decided soon after the armistice that they should be corrected or, to use the technical term, that the lists should be cleared. This proved to be a slow and laborious business, but a beginning was made in 1920–21, when a number of practitioners with initials in the early part of the alphabet had their lists cleared. It was, however, obviously unfair to deflate Dr. A's list when Dr. P's remained inflated, and before the clearing had proceeded very far it was decided (in 1927) by a joint committee representing both insurance and panel committees that removals should only take effect from a date to be agreed upon, and that in the meantime no practitioner should suffer any loss thereby. The scheme to be carried out included (1) a comparison of the number of names in the committees' register of persons accepted by practitioners with the number of credits recorded in those accounts upon which payment is based; (2) a verification that each name in a practitioner's list represented an insured person entitled to benefit. The effect of this clearance will be to reduce the number of units allotted to each doctor, but to increase the amount paid for each insured person. London is likely to lose 120,000 out of 1,924,000 units, and the value of the unit which is now 23·275*d.* per quarter will increase in value by nearly 6*d.* in the year.

THE DOCTOR'S DAY

"Come, tell me how you live," I cried,
"And what it is you do!"

XXVI.—THE LOCUM TENENS

MY FIRST EXPERIENCE

WITHIN 30 hours of defeating the examiners in my final examination I had my baptism of the troubles of a locum tenens. The time is 3 A.M. Sleep is broken by a voice bellowing beneath the bedroom window: "Will you come at once to Mrs. Burt, of 44, High-street?" After a hurried dressing I find that my caller must not have heard my request for him to wait; he has fled, and the streets of a strange town are bare and empty. I pick up both the midwifery and the emergency bags and, without a soul in sight to help, I set out to find High-street. Of course I know now that I can expect to find that High-street in any town is in one of the low-lying parts, just as I can be reasonably sure that "Laburnum-gardens" in any industrial northern town is the street with the privet hedge near the coal heap. But every doctor should provide his locum with a map. And let it be a recent map; or, better still, the doctor can spend five minutes drawing one up. It will save hours of his locum's time, for verily the strange crescents, courts, and cul-de-sacs of council houses were not built to ease the task of a stranger finding his way about.

My first morning surgery lasted three hours, and even then some of the patients had mercifully taken fright at the sight of the strange features of the youth who was in place of their own beloved doctor. I remember the first patient was an old "chronic," who was suffering from a mild diarrhœa, accompanied, as he lucidly described, with "a kind of a roaring feeling." I wonder, gravely, can this be a rectal carcinoma? With commendable conscientiousness I make the fullest investigation, and the victim has his first rectal examination. The next patient is a child who has vomited for three days. I recall my mental list of causes of vomiting in children and go with painful slowness through them. Could this be an early cerebral tumour? Why, how strangely every answer of the anxious mother seemed to correspond with the answer I had written to the question on cerebral tumour which was in the medicine paper a week ago. But all these patients, and a dozen others similar, are destined to remain quite fit.

The surgery is over, and in walking down the street I hear a child exclaim in tones of awe, "There's the new doctor!" Pleasant words after the strain of the final. I feel proud of my calling, and rather gay in the face of the life of medical adventure which lies ahead. But my visits soon chill my gaiety. A frigid female says, "You are very young—I'm afraid you won't understand my case." Some patients conceal their disappointment very badly, and in the case to which I am called of a young primipara in the first stage of labour I can well understand her regret that she has not her own doctor to help at such a time. My questions to patients are halting and awkward. Worse still, I find that the patient and I do not speak the same language,

and I do not quite "see daylight" through their dialect. At another case the mother teaches me something about measles; she knows the differential diagnosis better than I do. At my last visit I spend fully half an hour over investigating the case of a woman who says, somewhat pityingly, at the end, "Of course, Dr. Brainy understands me so." My spirits have ebbed away. Suddenly I remember she was the patient of whom Dr. Brainy had said, "Wish you would have a look at Mrs. X, I don't know what to make of her at all."

The evening surgery comes and I find double the number of faces I have been led to expect. This sudden popularity, I learn later, is not due to one's charm of manner or show of skill, but merely to the fact that a large number of panel or club chronics are anxious to get "a second opinion" (save the mark) from any new doctor on their case. In reality it is more likely the thirty-second opinion they have had; in some industrial practices the news that a new doctor has arrived in the district spreads like wildfire. Then I have my first experience of the less worthy type of panel patients, small in number but great in mischief-making, who may try to wheedle out of the locum certificates or prescriptions (for cod-liver oil, liveroid, &c.), which they well know would not be given by their own doctor. I also was persuaded by a miner to sign a certificate of suitability for admission to one of the industrial convalescent homes, when all he wanted was a cheap holiday at the expense of his more deserving comrades. He said he suffered from an ischiorectal abscess, and was unwilling to be examined; foolishly and unfairly I gave him a certificate—an action which was the source of much trouble afterwards. With my next patient I can find nothing wrong. He compliments me on the thoroughness of my examination. I smell a rat. Yes, I am right; he produces a subscription list for a local football club and wants half-a-crown. My last patient is an elderly lady, clearly in a state of agitation. She has with her a medicine bottle which, on holding up to the light, I see contains half-a-teaspoonful of medicine. Believe it or not, she wants this liquid analysed. She has heard the doctor has gone and not left an address; and I am touched by the terror she suffers at the prospect of being without her correct medicine. I promise I will call immediately should any untoward symptom arise from taking the medicine I have made up resembling the colour of the remaining fluid, and she departs with her fears somewhat allayed. My first evening surgery is ended. My medical education has begun.

A YEAR LATER

This is the story of a day in a country locum. At 5 A.M., returning from a confinement in a dull grey dawn, I crashed the doctor's car through a five-barred gate placed across a country lane. The farmer, early astir, is indignant; he demands and receives payment there and then (the county is Yorkshire). After the morning surgery I attend a coroner's inquest on an infant that died before medical help could be obtained. It is the first inquest I have attended; I am somewhat nervous, and I have carefully memorised my little speech. I am asked two brief questions and depart in three minutes with a guinea and a half, which, alas, I must hand over to my principal on his return. I resume my visiting, and go five miles by road and drive along a cart track for another two miles through purple heather. On arrival I am told my patient has just died. She was a farmer's daughter, aged 18, who has suffered from pulmonary tuberculosis for two years, although she has lived all her life on the farm. On the journey back I ponder on possible explanations of the infection and of her strange lack of resistance to it.

My next call is again some miles off the beaten track. There is only one building in the view which stretches for miles. My patient is a young married woman with diabetes. She gives herself insulin three times daily; the syringe and the insulin contrast oddly with the queer old building. The obliging country postman has left weekly samples at the surgery, and I am able to tell her that the urine is free from sugar. The country folk have enormous respect for our profession; my opinion is taken as law and no questions asked. My last visit is to a house where I am asked to attend to an injury. The man is suffering from a black eye, given to him by his faithful spouse, and I find the need of spiritual as well as physical healing. I may be only a locum, but I do see life.

At the evening surgery the first patient complains of abdominal symptoms. After a careful history and examination I suspect a psychoneurosis. I am much interested in this type of case, of which I knew nothing after qualification, having been taught nothing. What's wrong with the medical curriculum I try to put right by reading books by Culpin, Crichton-Miller, and Graham Howe. In this case I have the advantage of a current record of the man's medical history, written up for the last six years on his panel record cards—very interesting reading. In consequence I do not arrange for him to go into hospital, as I would have done a year ago, but ask him to call round after surgery hours, when I can pursue a little amateurish psychological investigation; or, more shortly and correctly, have a talk with him. When the doctor returns I shall learn more of the details. This will make a good addition to my list of such cases; in the course of the year many such opportunities have offered themselves of research in general practice.

My next patient, a country youth, asks me to draw two molars for him—without an anæsthetic; I frankly am frightened to do it and refuse. But my principal is accustomed to do extractions, tonsillectomies, and other minor surgical interventions without any of the fussy preparation which I would have thought necessary—and his results are admirable. It is interesting to compare the different generations. We recently qualified men are inferior in every way, with the possible exception of the recognition of minor endocrine disorders, antenatal work, and prophylaxis generally. Patients listen in open-eyed astonishment to what one regards as ordinary common sense in personal hygiene; they say, "but my doctor never told me that."

My last visitor brings a message from a patient whom I saw earlier in the day. I thought she required a smart purge and gave her five grains of calomel which, I am told, "nearly killed her." They have already called in another practitioner. This is the third complaint about my dispensing in this locum; and I try to forget the incident over a game of tennis to which some country people, with characteristic hospitality, have invited me.

WAYS AND MEANS

The newly qualified locum is generally paid 7 guineas per week, all found. A year's experience generally entitles him to 8 guineas; only in exceptional circumstances is he worth more. I feel better for resisting the temptation to charge 10 or 12 guineas when I know that the doctor is down with pneumonia, and that I am the only locum available. Sometimes I have been asked to live in lodgings which have not the amenities or the well-stocked library or larder of a doctor's house, and I have felt entitled to something extra on that account. I would advise a locum when departing to leave behind him liberal gratuities to the household staff, if for no other reason than as a premium against the risk of a return visit.

I obtain my jobs through various agencies. With a slice of luck I have had fairly continuous employment for two years; I now find that fewer doctors are employing locums owing to hard times. Naturally one must be reasonably trustworthy, tactful—and sober. (I notice that a London agent enters names of suitable locums in a book labelled "Locums fit to be sent out"!) Locum tenens is a heaven-sent opportunity to learn one's job in someone else's practice.

CORRESPONDENCE

THE ATTACK ON THE SLUMS

To the Editor of THE LANCET

SIR,—May I congratulate you on the leading article in your issue of Nov. 11th. In respect of the reference to my own calculations, recently published in the *Architects' Journal*, and Sir Ernest Simon's estimates in the "anti-slum campaign," I do not really think that the figures which you quote are comparable. It is therefore impossible to say that his err on the high side or mine err on the low. His figure of 4,000,000 is a rather vast one certainly, and I for one should not be prepared to estimate that there were in this country such a large number of unsatisfactory houses—this for reasons which I have stated elsewhere. But Sir Ernest Simon's immediate programme is to supply each family with a separate dwelling, for which need he gives a figure. My figure of 1,400,000 relates to housing needs at the present time, taking account both of overcrowding and unfit houses. I would agree that my estimate is in fact probably on the low side, but, being in no sense comparable with Sir Ernest Simon's, the considerations of which you take account in your article are really not applicable.

Again, you adjudge as too low my estimate that housing conditions in the areas not dealt with in my survey are half as bad as in the towns which were included. The report of Dr. Mackintosh on the health of Northamptonshire can hardly be said to prove that this is an under-estimate, as Northamptonshire is not a very large part of Great Britain.

I am, Sir, yours faithfully,

PHILIP H. MASSEY, B.Sc.

Mecklenburgh-street, W.C., Nov. 16th, 1933.

DIVERTICULA OF THE SMALL INTESTINE

To the Editor of THE LANCET

SIR,—A considerable experience of diverticula of the alimentary tract and of the associated literature has interested me in this subject during the past few years. Your annotation of Nov. 11th raises some interesting points. If those diverticula which are obviously secondary to traction, ulceration, or cicatrisation are excluded a large group is left which may be conveniently termed idiopathic—a word which in this instance will probably come to mean congenital. Single examples of the duodenal variety have not been recorded more frequently than multiple. The pancreas is developed from three duodenal buds—two ventral and one dorsal. Two of these buds persist as the ducts of Santorini and Wirsung, the third disappears; it is probable that occasional persistence of this or even of accessory buds, accounts for the solitary duodenal diverticulum which is usually perivaterian in situation. Certainly the case described by D. P. D. Wilkie (Edin. Med. Jour., 1913, ii., 219), in which the pancreatic tissue was found *in* the fundus, is explicable in this way. Solitary diverticula containing pancreatic tissue, found in association with the first few inches of the jejunum, may originate in the same manner.

All other solitary diverticula of the small intestine, jejunal or ileal, represent persistence of the enteric portion of the vitelline duct, associated with the name of Johann Meckel. In addition to the mechanical and inflammatory disturbances which may arise in sacs of this type, pathological changes are also liable to occur in connexion with heterotopic deposits of pancreatic or gastric epithelium. In my Hunterian lecture (1933) I recorded also a series of neoplasms originating in these diverticula.

Similarly it is probable that multiple diverticula, which are never encountered in connexion with the ileum alone, but invariably with the jejunum or duodenum, are congenital; they probably represent persistence of the duodenal cæca of fishes, and the diverticula of the duodenal and jejunal portions of the intestinal tract in pig and human embryos, described by Lewis and Thyng (Amer. Jour. Anat., 1908, vii., 505). J. R. Ryder (Vet. Record, 1930, x., 707) records the comparative frequency with which multiple diverticula of the small bowel are found in pit ponies of Icelandic stock. Some of the multiple diverticula of my own series had walls as muscular as those of the parent bowel, and none was complicated by sclerosis of the mesenteric vessels. Cases have occurred of general diverticulosis of the hollow viscera.

Such are the facts which lead me to believe in the congenital origin of these diverticula. The value of forcible distension experiments is dubious because it is unlikely that any comparable increase of the pressure within the bowel occurs under natural circumstances. The pouches rarely, if ever, occur in relation to organic obstructions, and diverticulosis associated with duodenal ileus is unknown. There is one great difficulty to overcome before an explanation which assumes herniation of a previously intact bowel wall is accepted—namely, the fact that the antimesenteric border of the bowel is subjected to much more stress than the mesenteric, yet these diverticula occur on the latter. It may be argued that the vascular openings are in the mesenteric borders, but it does not seem reasonable to believe that nature would leave these places vulnerable; otherwise diverticulosis would be more common. In my cases the pouches were in the peritoneal windows—i.e., between the vascular openings.

I am, Sir, yours faithfully,

GEORGE A. MASON.

Newcastle-upon-Tyne, Nov. 15th, 1933.

ACHOLURIC JAUNDICE

To the Editor of THE LANCET

SIR,—Dr. A. P. Thomson describes in your last issue (p. 1139) a case of acholuric jaundice with neither increased fragility of the red cells nor any evidence of a familial incidence. Although some cases are recorded in which this condition is apparently acquired, and others in which the fragility of the red cells is normal, yet when both these cardinal signs are absent it is surely better to describe such a case as an example of hæmolytic anæmia, and leave it at that. Moreover, Dr. Thomson's case is unusual in other respects. The considerable leucopenia and the low reticulocyte counts, the normal Price-Jones curve (made, it is true, a few months after splenectomy), the persistence of the pre-operative degree of anæmia, and of the positive indirect van den Bergh reaction a year after splenectomy—while they do not individually exclude the diagnosis, yet in sum they throw doubt on it.

These findings suggest an intermediate condition between splenic anæmia—the original diagnosis—and hæmolytic anæmia; there is evidence of both depressed blood formation (leucopenia and absence of reticulocytosis) and of excessive hæmolysis. Whatever the exact diagnosis may be, this letter is

written to support Prof. Davidson's suggestion (Quart. Jour. Med., April, 1933, p. 543) that cases without a family history of the disease (and especially when in addition they do not show fragility of the red cells) should not be recorded as acholuric jaundice.

I am, Sir, yours faithfully,

Derby, Nov. 20th, 1933. DOUGLAS HUBBLE.

DIET AND WEIGHT

(" IN DEFENCE OF ROTUNDITY ")

To the Editor of THE LANCET

SIR,—Now that the echoes of Dr. Christopher Howard's Chestertonian bellow of wrath have ceased to rumble in the caverns of Fleet-street, we venture to assure him that we have no quarrel with the obese who carry their load of stones as airily as he does. May they long continue to bathe this grey world with the sunshine of their mellow philosophy, even if its rays do scorch the chitinous heads of the pseudo-scientific. And—to abandon the metaphor—may their shadows never grow less.

But we cannot allow Dr. Howard to ignore the fact that to some the burden of obesity is a real tragedy. This is particularly true of the type of obesity which converts a young girl into a deformed caricature, and it is not impertinence to refer to such persons, as we did in our previous letter, as " unfortunates."

Our purpose in writing was simply to protest against the widespread belief, which we have reason to think is erroneous, that dietetic restriction has no effect on these " endogenous " cases.

We are, Sir, yours faithfully,

F. B. BYROM,
DONALD HUNTER.

London Hospital, Whitechapel, Nov. 20th, 1933.

NUTRITION AND PREGNANCY

To the Editor of THE LANCET

SIR,—While appreciating fully the necessity for such teaching as is embodied in Prof. Mellanby's comprehensive survey of the essentials of nutrition in relation to childbearing, I cannot but regret the omission of vitamin B from his list of necessary factors. The most relevant statement I am able to find is that " a high cereal diet calls for increased consumption of protective foods such as milk and green vegetables to prevent damage." It is clear that the type of protection here referred to is that provided by vitamin B in its relation to calorific intake, but I doubt whether sufficient protection is provided by the articles of diet enumerated as advisable during pregnancy and lactation. Milk has been shown, by the studies of Donelson and Macy and others, to be frequently not a good source of the B-vitamins; Plimmer has estimated that most of the green vegetables and fruits have only a low activity. Egg yolk, sea fish, and calf's liver will contain vitamin B, but it is difficult to see from which sources, in this list, it is possible to derive more than a normal intake of vitamin B, even if that is provided. Since, as we have reason to believe, pregnancy and lactation increase the vitamin B demands of the mother three to five times, it is clear that the inclusion of vitamin B-containing foods in the diet is as necessary as that of vitamins A and D.

I have drawn attention to this point because in my own experience I have found it impossible to breed successfully from a colony of experimental rats without paying due attention to the supply of vitamin B. The survival rate among animals whose mothers were adequately fed was 88 per cent., as against only 16 per cent. among those whose mothers ate a diet limited in vitamin-B intake. As far as possible the diets were otherwise similar.

It would seem better therefore to recognise, as does Theobald in his consideration of the dietary necessities in pregnancy (Brit. Med. Jour, August 26th, p. 376), the wisdom of ensuring a sufficiency of vitamins A, B, C, and D in an otherwise well-balanced diet.

I am, Sir, yours faithfully,

A. Z. BAKER.

Wembley Park, Middlesex, Nov. 20th, 1933.

INDUSTRIAL WELFARE

To the Editor of THE LANCET

SIR,—In the reference to the centenary dinner of the Home Office Factory Inspectors Department, contained in your last issue (p. 1161), the following paragraph appears :—

" Even in these later days, the cause of industrial welfare has often been advocated by philanthropic employers, less because of any realisation that their consideration for their work-people is in fact a business asset, but in order that their rivals shall also be called upon to incur the expense of welfare provisions."

I desire to enter a most emphatic protest against this comment on the grounds that it is both unfair and untrue. Far from wishing his trade rivals to be forced to adopt welfare and medical supervision, the up-to-date employer views the establishment of such services as a business asset and as an advertisement which gives him an advantage over other firms less enlightened. Furthermore, welfare and medical services, properly managed, are a definite factor in production and in reducing lost work-time, and are a saving, not a source, of expense. Consequently it can only be on the grounds of humanitarianism and disinterested public service that modern employers of labour recommend such services to others.

I am, Sir, yours faithfully,

London, Nov. 17th, 1933. N. HOWARD MUMMERY.

TREATMENT OF AN INDOLENT ULCER

To the Editor of THE LANCET

SIR,—The following case may be interesting from the point of view of treatment.

A French girl, aged 3, came under my care on July 14th, 1933. More than a year previously she had been treated by X rays in France for ringworm which had resulted in almost complete epilation with pigmented scarring of the whole scalp. Focal necrosis of bone had occurred from which sequestra had been removed. When I first saw her there was an indolent ulcer in the right occipital region measuring 2·5 × 2·2 in., which was clean. The base of the ulcer was covered with exuberant granulations. The mother stated that the ulcer had shown little disposition to heal during the past 12 months or so despite numerous and varied local applications. It was decided to try an occlusive dressing, and on July 23rd the ulcer was covered with two layers of Elastoplast cut into strips, one layer being applied longitudinally, the other transversely. The dressing was moved five days later. There was no sign of local sepsis and a slight general improvement was noted. Another dressing was applied. During the following week the patient bumped her head, causing the ulcer to bleed. Nevertheless there was again a definite improvement when the ulcer was inspected on August 6th. The patient returned to France and the mother was instructed to apply a fresh dressing at weekly intervals. On Oct. 2nd the ulcer was reported to be " the size of a little finger-nail." On Nov. 16th, less than four months after the treatment was begun, the ulcer was reported to be completely healed.

I am, Sir, yours faithfully,

Crediton, Devon, Nov. 19th, 1933. L. N. JACKSON.

TANNIC ACID FOR BURNS

To the Editor of THE LANCET

SIR,—The committee appointed by the Mines Department to report on the treatment of men burned in colliery explosions advocate (see THE LANCET, Oct. 28th, p. 1005) as the most suitable coagulant a 20 per cent. solution of tannic acid containing 1 in 1000 of acriflavine. It is suggested, presumably for convenience, that this preparation should be kept in the form of powders, but there is no definite instruction to the effect that stock solutions should not be kept. I wish to emphasise the necessity for storage in powder form by calling attention to the fact that moulds will grow quite well in aqueous solutions of tannic acid containing 1 in 1000 acriflavine. The detrimental results of mould growth in such solutions is well illustrated in a paper recently published by me (Quart. Jour. Pharm. and Pharmacol., 1933, vi., 3). If such solutions are kept for any length of time their antiseptic properties will suffer from adsorption of the dye by the tannin—an effect which it is possible to demonstrate by practical experiment.—I am, Sir, yours faithfully,

WILLIAM A. WOODARD.

Pharmaceutical Department, St. Thomas's Hospital, Nov. 15th, 1933.

THE LATE DR. E. E. MADDOX

To the Editor of THE LANCET

SIR,—In your obituary notice of Dr. E. E. Maddox last week there is a statement which is not quite correct. Dr. Maddox did not himself describe an apparatus before the Ophthalmological Society in 1883. He was not a member of that society until 1899. His paper on a new method of Determining the Relation between Convergence and Accommodation was communicated to the society by Prof. W. S. Greenfield, of Edinburgh, and will be found in Vol. III. of the Transactions of the society.

I am, Sir, yours faithfully,

Nov. 20th, 1933. A. H. T.

OBITUARY

ERIC DALRYMPLE GAIRDNER, D.S.O., M.B. Glasg.

WE regret to announce the death of Dr. Eric Dalrymple Gairdner, which occurred on Oct. 20th, at Ayr, at the close of a short illness. He was educated at Rossall, proceeding for his medical training to the University of Glasgow, where his father, the late Sir William T. Gairdner, was the distinguished professor of medicine, and where he graduated M.B., Ch.B. Glasg. in 1902. After holding the house appointments he became resident physician and, later, resident surgeon to the Royal Infirmary. This post he held till 1905, when he entered practice in Ayr, and at the outbreak of war was surgeon to the Ayr County Hospital. He joined up at once with the rank of major R.A.M.C. (T.), and had a brilliant military record. He was present with the Royal Scots Fusiliers in many important engagements, was wounded more than once, and more than once mentioned in dispatches. In 1916 he obtained the D.S.O., to which Order a bar was later added for an action of personal bravery that might well have gained him the V.C., for he was himself shot down while attending a wounded N.C.O. under heavy fire. He was awarded also the French Croix de Guerre, and the bronze medal of the Board of Trade for saving life during the torpedoing of a transport. At the conclusion of hostilities he served for a time with the Minister of Pensions before returning to Ayr as surgeon to the County Hospital. This post he resigned upon being appointed medical officer in Scotland to the L.M.S. railway. Dr. Gairdner was only 55 at the time of his death, and his life was shortened by the injuries which he received during the war.

THE LATE DR. A. L. BALY

Dr. G. F. Stebbing writes: I am glad to see that in your obituary notice of Dr. A. L. Baly last week you referred to his interest in boys' clubs. A most lovable side of his character was seen among them; he was readily accessible to every member of them, and took the greatest interest, not only in the boys themselves but also in their homes. He regarded their future careers as his especial charge, and a very large number of boys owe their start in life not only to his advice but in many cases also to his material help. One of those who worked with him in his clubs sends the following reminiscent note.

"Is Doc. here to-night?" "No." "Is he coming later?" "Not sure. Anything I can do for you?" "No. I just wanted to ask him something." This meant that the youngster was in trouble. When "Doc." appeared the questioner would hang about patiently until he could get a minute's private speech. Then, perhaps, a sore finger or bruised shin was examined and the pulse tested, and a battered stethoscope came into play. Mostly the lad was dismissed with a light heart. Sometimes the trouble was deeper—and of mind rather than body, particularly with older members. Then the interview was longer and ended with "Doc." calling cheerily after the departing youth, "Good-night, old man. Come round to my house Sunday morning. Don't be later than half-past ten."

Anyone familiar with Baly's actions and manner at the Fitzroy Lodge Club will recognise in this reminiscence a typical occurrence, and who can say how much good was thus done?

ERRATUM.—A passage from one of the tributes to the late Sir George Makins, which appeared in THE LANCET last week (page 1178), was inaccurately quoted. Sir Charles Ballance entered St. Thomas's Hospital not in the same year as Sir George Makins, but in the year in which his distinguished predecessor on the staff became qualified.

INDIVIDUAL AIDS TO HEARING.—We are informed by Radio-Aid Limited, of 45, Duke-street, London, W.1, that they find it necessary to make a charge for a trial of one of their aids to hearing, which are made individually to suit each person's needs and are not produced in the mass. The charge is to cover the expense of making up a suitable instrument and, in the event of its return, of fitting new batteries, sterilising the earpiece, and renewing the case. No charge is made if the machine is purchased. The minimum charge for a ten-day trial is 2 guineas, and more in exceptionally difficult cases, but seldom exceeds 5 guineas; a written quotation is given beforehand. Each patient is tested on an audiometer, and this service is free. Radio-Aid would, quite rightly, prefer to receive patients through their doctors, and it is obvious that patients, in their own interests, should consult an otologist before seeking a hearing-aid, so that a form of deafness which is capable of cure or improvement should not be overlooked.

PARLIAMENTARY INTELLIGENCE

NOTES ON CURRENT TOPICS

Opening of New Session—King's Speech

ON Friday, Nov. 17th, the Royal Assent was given by Commission in the House of Lords to the Expiring Laws Continuance Act, the British Nationality and Status of Aliens Act, the Firearms and Imitation Firearms (Criminal Uses) Act, the Local Government Act, the Road and Rail Traffic Act, and other Acts.

The new Session of Parliament was opened by the King in State on Tuesday, Nov. 21st. In the course of the Gracious Speech from the Throne His Majesty said that Parliament would be invited to give immediate consideration to a comprehensive measure which would put the Unemployment Insurance Scheme on a sound and permanent footing and would establish a new system for the assistance and welfare of the unemployed outside insurance. The Government intended in conjunction with the local authorities to press forward with the improvement of housing conditions by the clearance or reconditioning of houses unfit for human habitation and their replacement when demolished by dwellings which accorded with modern standards and could be let at reasonable rents. Measures dealing with the law relating to betting and gambling, the reconditioning of working-class houses, and regulating the hours of employment of young persons, and other conditions in the distributive trades would also be submitted. A Bill would be introduced to amend the Poor Law in Scotland. Other measures of importance would be laid before Parliament and proceeded with as time and opportunity offered.

Hospitals and Road Accidents

In the House of Lords on Nov. 15th the Road and Rail Traffic Bill was read the third time and passed. On Nov. 16th the House of Commons considered the Lords' amendments to the Bill when Mr. OLIVER STANLEY, Minister of Transport, moved that the House agree with the new clause inserted by the Lords on the motion of Lord Luke providing for the payment of expenses reasonably incurred by hospitals in the treatment of motor accidents. The changes which were made in this matter, as compared with the 1930 Act, were as follows: The provisions in that Act did not extend to out-patients. The hospitals would now be able to recover up to the sum of £5 for out-patients. The maximum sum in the 1930 Act in respect of an in-patient was £25, and it was now increased to £50. Under this provision they would be able to recover up to the maximum, but they would have to deduct from it anything which they received from the patient.

Mr. DENMAN asked when it was proposed that the provision of the clause should come into operation. A reasonable time should be given before this provision came into operation so that policies, which ran for a year, might not have this new liability thrust upon them without some reasonable time being given to the insurance companies to adjust their rates.

Major HILLS said he had always felt that the section in the 1930 Act was insufficient. The hospitals were not receiving sufficient money; he was glad that the Minister had now increased the amount payable and added certain extra advantages also. He understood that the cost to the insured person would not be more than about 2*s.* or 2*s.* 6*d.* on his premium, which was a small cost to meet the great charge on the hospitals due to motor accidents.

Mr. PARKINSON, on behalf of Members of the Opposition, thanked the Minister for this concession. They all knew the very great hardships placed upon the hospitals owing to road accidents. It was very unfair that those institutions had had to bear that heavy burden and that they had been unable to get any return from the people who had been injured. He did not think that there was any need to quibble about the cost of the premium of insurance as he was satisfied that there was no one in the country, who ran a motor-car, who would object for a moment to pay the increased charge on his policy in order to meet the obligations which might fall upon him as a result of an accident on the road.

Mr. STANLEY said that under the original proposals the hospitals would only receive something like £30,000 a year, and the cost of this extended proposal must be considerably less; something in the nature of £15,000 a year.

The Lords' amendment was agreed to.

HOUSE OF COMMONS

WEDNESDAY, NOV. 15TH

Motor Omnibus Speeds and Road Accidents

Mr. LOVAT-FRASER asked the Minister of Transport if his attention had been called to the continued increase in the accidents involving omnibuses in the metropolitan police area since the time schedules had been shortened; and if he would institute inquiries with a view to seeing that the existing dangerous speeds were discontinued.—Mr. OLIVER STANLEY replied: While there has been some increase in the number of accidents involving omnibuses in the metropolitan police area, I have no evidence that the new time schedules are responsible. I am, however, considering whether some further analyses of the figures might with advantage be obtained.

Transport of Acids and Dangerous Chemicals

Colonel GOODMAN asked the Home Secretary if he would take steps to regulate the transport of acids and dangerous chemicals and other materials by road.—Sir JOHN GILMOUR replied: The question of applying the provisions of the Petroleum (Consolidation) Act, 1928, to certain dangerous chemicals, with a view to regulating the conditions of their conveyance by road, is at present under careful consideration. The matter is one of considerable complexity, but there will be no avoidable delay in coming to a decision.

Medical Practitioners and Road Accidents

Mr. DORAN asked the Minister of Transport if he could consider introducing early legislation to raise the motorists' driving licence from 5*s.* to 7*s.* 6*d.*, in order to meet the fees of medical practitioners who attended motor accidents, and who, at the present time, did not receive any certain remuneration for their services.—Mr. OLIVER STANLEY replied: I would refer my hon. friend to the answer I gave on June 29th (see THE LANCET, July 8th, p. 108). The select committee have just reported on the Road Traffic (Emergency Treatment) Bill, and I can only say that I will take their report into consideration.

THURSDAY, NOV. 16TH

German Doctors and others in England

Sir PHILIP DAWSON asked the Home Secretary how many Germans since Jan. 1st had taken up appointments as doctors, teachers, or lecturers in hospitals, colleges, schools, research departments, &c.; and under what conditions and for what length of time these appointments had been sanctioned.—Sir JOHN GILMOUR replied: About 80 Germans have been permitted to take posts as teachers in schools; the number is not in excess of those admitted in previous years. About 50 of these have come for short periods under a special agreement arranged by the Board of Education for a mutual interchange of German and British teachers, and most of the remainder are teaching German in schools which require a German teacher. As regards the other classes, about 130 research workers, medical and other, have found temporary accommodation in universities. With a very few possible exceptions these persons hold no formal appointment; they are merely given facilities to continue their research work for the time being in the hospitals or laboratories, and are not displacing British subjects.

Housing

Sir F. FREMANTLE asked the Minister of Health the number of houses erected, respectively, with and without public financial assistance during the year ended Sept. 30th, 1933; the corresponding numbers for 1932; and the average cost of such houses of four-roomed non-parlour type.—Sir HILTON YOUNG replied: 50,433 houses were provided with State assistance and 167,880 without State assistance in England and Wales during the year ended Sept. 30th, 1933, making a total of 218,313. The corresponding numbers for the year ended Sept. 30th, 1932, were 69,090 and 132,886 respectively, making a total of 201,976. (These numbers exclude houses of a rateable value exceeding £78; £105 in the Metropolitan area.) The average cost of four-roomed houses cannot be separately stated, but the average cost of all non-parlour houses in contracts let by local authorities (other than the L.C.C.) or in approved direct labour schemes in England and Wales during the year ended Sept. 30th, 1933, was £292. The corresponding figures for the year ended Sept. 30th, 1932, was £312. These average costs included the cost of paths, drains, and fences, but excluded the cost of land, roads, sewers, and architects' fees.

Sir F. FREMANTLE asked the Minister of Health the number of cottages erected in agricultural parishes during the years ended Sept. 30th, 1932 and 1933, respectively; and the average rental at which such cottages were let.—Sir HILTON YOUNG replied: The numbers of houses completed with State assistance in agricultural parishes in England and Wales during the years ended Sept. 30th, 1932 and 1933, were 4392 and 3103 respectively. I have no information as to the average rental of such houses.

Sir F. FREMANTLE asked the Minister of Health the number of houses reconditioned under the Housing (Rural Workers) Act, 1926 to 1931, during the years ended Sept. 30th, 1932 and 1933, respectively.—Sir HILTON YOUNG replied: The numbers of houses reconditioned in England and Wales under the Housing (Rural Workers) Acts, 1926 and 1931, during the years ended Sept. 30th, 1932 and 1933, were 1286 and 869 respectively.

Sir F. FREMANTLE: In view of that extremely unsatisfactory result, cannot the right hon. gentleman do something to move rural authorities to act in this matter which has now been hanging over for a long time?

Sir HILTON YOUNG: The hon. Member is aware that I recently addressed a circular on the subject to the local authorities, and it is undoubtedly bearing good fruit.

A Ministry of Insurance

Mr. SMEDLEY CROOKE asked the Prime Minister if he would consider the advisability of setting up a Ministry of Insurance to take over the whole of the financial administration of pensions, unemployment benefit, health insurance, and public assistance expenditure, in order both to save administration expenses and provide a nucleus for a comprehensive system of contributory all-in insurance.—Mr. MACDONALD replied: Consideration has been given from time to time to proposals on the lines of that of the hon. Member, but the conclusion has been that the financial and practical difficulties in concentrating the existing schemes in one administration and replacing them ultimately by such a scheme as the hon. Member has in mind are so serious as to outweigh any possible advantages. I do not think that a further review would be likely to lead to any different conclusion.

Sir F. FREMANTLE: Is it not a fact that the insurance scheme originated in a single measure in 1911, and that experience showed that the different branches had to be separated after a time in administration?

Mr. MACDONALD: That is so.

Unemployed Persons and Public Assistance

Mr. H. WILLIAMS asked the Minister of Health for the latest available date the number of persons, exclusive of dependants, who were in receipt of poor relief on grounds of unemployment; and how many of these were persons insured under the Unemployment Insurance Act and registered at an employment exchange, not so insured but registered at an employment exchange, and neither insured nor registered at an employment exchange.—Sir HILTON YOUNG replied: The following is the answer: The latest complete return of the number of men and women in receipt of out relief on account of unemployment relates to Jan. 1st, 1933, and does not give particulars of their condition in respect of insurance or registration. The number then was 122,298 men and 8273 women. The following Table gives the weekly averages of persons in receipt of outdoor relief and registered at an employment exchange during September, 1933. The relief to an unknown number of these persons may have been due primarily to sickness and not to unemployment.

	Insured.	Uninsured.
Men	74,875	33,926
Women	2,927	5,191
Total ..	77,802	39,117

I am unable to say how many persons in receipt of outdoor relief on account of unemployment are not registered at an employment exchange, but the number cannot be large.

Slum Clearance

Mr. ANEURIN BEVAN asked the Minister of Health the number of urban district councils in necessitous areas who had found it financially impossible to submit slum-clearance schemes; and what steps he proposed to take to assist them.—Sir HILTON YOUNG replied: No urban district council has informed me that on financial grounds it is unable to submit the programme which in common with other housing authorities it has been asked to furnish. The last part of the question does not therefore arise.

Major NATHAN asked the Minister of Health whether he intended to issue any manual with respect to the planning, design, and construction of the rehousing accommodation to be provided by local authorities for families displaced as a result of clearance operations under the Housing Act, 1930.—Sir HILTON YOUNG, in reply, said that a manual on the subject was about to be issued.

Malnutrition among Ex-Slum Children.

Mr. EDWARD WILLIAMS asked the Minister of Health whether other public medical officers in addition to Dr. G. C. M. McGonigle, of Stockton-on-Tees, had reported signs of malnutrition and physical deterioration in children who had been removed from the slums into new housing estates.—Sir HILTON YOUNG, in reply, said that no further report of the kind referred to by the hon. Member was known to him.

Town and Country Planning

Viscount ELMLEY asked the Minister of Health when the advisory committee on town and country planning would be constituted.—Sir HILTON YOUNG replied: This committee will be set up forthwith, and I am asking a number of representative organisations to suggest the names of suitable persons.

National Health Insurance Cards

Mr. LOGAN asked the Minister of Health the number of cards issued in respect of employed persons over the age of 65 under the National Health Insurance Acts.—Sir HILTON YOUNG replied: The number of cards issued in respect of these persons employed for one or more weeks during the first half of this year was approximately 330,000.

National Health Insurance Benefits

Mr. LOGAN asked the Minister of Health, (1) whether a person unemployed from July, 1932, to July, 1933, and who paid half the arrears of contributions to health and pension insurance would receive any monetary benefits for sickness or disablement in the year 1934, and (2) what benefits, other than free doctor and medicine and the conservation of pension rights, were available for a person unemployed for 12 months and who paid half the arrears due to unemployment in accordance with the Insurance Act, 1932.—Sir HILTON YOUNG replied: A person, who will be entitled to remain in health insurance after the end of this year and was continuously unemployed from July, 1932, to July, 1933, will be credited with 26 contributions in respect of that period, and even if no arrears be paid will be entitled to medical and maternity

benefits during the year 1934 in addition to the conservation of his pensions rights. By paying ten arrears at 9*d.* within the time allowed he will become entitled to sickness and disablement benefits at the minimum rates in the year 1934, but the title to such benefits will not commence until four weeks after the date of payment of the arrears. The payment of further arrears will secure higher rates of sickness and disablement benefits.

FRIDAY, NOV. 17TH

Road Accidents

Colonel SANDEMAN ALLEN asked the Home Secretary whether, as a result of the special Return which he had recently obtained from all police forces in England and Wales, he could state the number of fatal and non-fatal road accidents; and the number of persons killed and injured in those accidents in the first nine months of this year, with corresponding figures for the first nine months of last year.—Lord ERSKINE replied: The returns of road accidents furnished by the police are not generally available until the end of the calendar year to which they relate. It was considered desirable this year to ask for a special return in respect of the first nine months of this year. The following Table shows the road accidents caused by vehicles and horses in England and Wales in the first nine months of 1933, with corresponding figures for 1932:—

Fatal accidents	4,533	4,227
Non-fatal accidents involving personal injury	127,953	122,069
Number of persons killed ..	4,688	4,314
Number of persons injured ..	151,396	141,711

MEDICAL NEWS

University of Oxford

Prof. Arthur Thomson has resigned from the Dr. Lee's professorship of anatomy as from Dec. 25th.

Schorstein research fellowship in medical science.—An election will be made to this fellowship in June, 1934. Candidates must be graduates of the university and hold a registrable medical qualification. They must be under 35 years of age on Oct. 1st, 1934. The fellowship is of an annual value of £200. Applications should be sent to the dean of the medical school at the university museum not later than April 30th, 1934.

University of Cambridge

On Nov. 17th the following degrees were conferred:—

M.B. and B.Chir.—W. C. Barber, I. G. Robin, W. S. McKenzie, and G. C. Martin.
M.B.—J. S. Barker and T. D. Day.
B.Chir.—E. J. M. Bowlby.

University of London

The Brown Institution lectures for 1933 will be given by Prof. F. W. Twort, F.R.S., superintendent of the institute, at the London School of Hygiene, on Dec. 13th, 14th, 15th, 18th, and 19th, at 5 P.M. The subject will be Present-day Problems in Bacteriology, and no tickets are required for admission.

The Geoffrey D. Duveen travelling scholarship for 1933–34, of the value of £450, has been awarded to Mr. Maxwell Philip Ellis, who proposes to investigate the healing of mastoid wounds and the relationship between mastoiditis and osteitis. A grant of £100 has been made to Mr. G. H. Livingstone, F.R.C.S., Duveen student for 1932–33, to enable him to continue his studies abroad.

London Jewish Hospital Medical Society

The fifth annual dinner of this society will be held on Sunday, Dec. 10th, at the Trocadero Restaurant, Piccadilly, W.1. Mr. Walter Elliot, Minister of Agriculture, will be the guest of honour, and Dr. M. D. Eder, the president, will be in the chair. The Lady Erleigh and Mr. James de Rothschild will also speak. The secretary may be addressed at the hospital, Stepney Green, E.1.

Royal Sanitary Institute

A sessional meeting of this institute will be held at Liverpool, on Friday, Dec. 1st. Dr. W. M. Frazer, M.O.H. for the city, will open a discussion on housing and slum clearance, and Dr. C. O. Stallybrass, deputy M.O.H., will speak on the prevention of measles by the use of human adult serum.

On the following day there will be visits to clearance areas, a housing estate, and a children's hospital.

Royal Northern Group of Hospitals

A post-graduate course will be held from Nov. 30th–May 3rd at this hospital, and it has been arranged as far as possible for the lectures to be given on alternate Tuesdays and Thursdays at 3.15 P.M. On the first Wednesday of each month from December to May a clinical lecture and demonstration will be given at 3.15 P.M. at the Royal Chest Hospital, City-road, E.C. The course is free to all practitioners, and further particulars may be had from the dean, Dr. E. G. B. Calvert, at the hospital, Holloway-road, N.7.

University of Leeds

Mr. George Armitage and Mr. G. W. Black have been appointed clinical lecturers in surgery and ophthalmology respectively. Dr. H. G. Garland has become honorary demonstrator in toxicology.

North-West London Medical Society

The annual dinner and dance of this society will be held at the Park Lane Hotel, Piccadilly, W., on Thursday, Dec. 7th, at 7.30 for 8 P.M. The hon. secretary is Dr. L. M. Green, 50, Brook-street, W.1.

Medical Officers of Schools Association

At a general meeting of this association to be held at 11, Chandos-street, Cavendish-square, London, W.1, on Friday, Dec. 8th, at 5 P.M. (tea at 4.30 P.M.), Sir Weldon Dalrymple-Champneys will read a paper on undulant fever.

British Serbian Units Branch

The twelfth annual reunion of this branch of the British Legion and of those who served Serbia during the war will be held at the Lysbeth Hall, Soho-square, London, W., on Saturday, Dec. 2nd, at 7 for 7.30 P.M. Lieut.-Colonel A. E. Kidd will preside. Tickets may be had from Miss C. M. Marx, 24, Melcombe-court, Dorset-square, N.W.1.

Hunterian Society

A meeting of this society was held on Nov. 20th with Mr. W. E. Tanner, the president, in the chair. Mr. P. J. Hannon, M.P., opened a discussion upon alcohol by affirming its value to the citizen. After tracing the long history of the use of alcohol by man, he stated that beef and beer had been the basis of national advancement, and referred to a medical commission as reporting that beer was a first-class article of food. The case for total abstinence was made out by Dr. J. D. Rolleston, who quoted the huge figures supplied by convictions for drunkenness in the country, and deplored the amount of money spent upon alcohol, the use of which, he said, was of no value to the citizen. He mentioned that in his own hospital he had persuaded his colleagues to dispense with alcohol in their treatments, as he had himself done for 30 years and had never regretted his course. Mr. W. J. O'Donovan, M.P., defended the use of alcohol on the grounds that it was an anodyne and valuable in days when life was a severe strain. Mr. J. Hugh Edwards followed Dr. Rolleston's lead in quoting the drink bill of the country and declared that, as a Royal Commission had found 30 per cent. of the poverty and 40 per cent. of the criminality of the country due to drink, those in favour of the drink traffic had a difficult case to defend. Colonel C. T. Samman spoke warmly in defence of the use of alcohol, when Dr. T. Rushbrooke alluded to fine careers that had been ruined by drink. Dr. Gerald Slot attributed the value of alcohol among other things to its promotion of cordiality; and Sir James Dundas-Grant could not imagine the medical profession giving up the medicinal use of tinctures, aromatic spirits, and brandy in certain cases. Dr. H. H. Sanguinetti closed the debate by asking the medical profession to take a more serious interest in the matter, if only because the returns from hospitals where no alcohol was given were at any rate as good as those from other institutions.

Certificated Blind Masseurs

Lord Moynihan has accepted the presidency of the Association of Certificated Blind Masseurs (Blind Chartered Masseurs and Masseuses).

A Debate on Tonsillectomy

As announced in our last issue, the Fellowship of Medicine has arranged a debate on the motion "that operations for the removal of tonsils are too often performed without adequate cause." It will be held at the house of the Royal Society of Tropical Medicine, 26, Portland-place, London, W., at 8.30 P.M., on Dec. 7th. The openers will be Mr. Herbert Tilley and Dr. Dan McKenzie.

Dangerous Drugs in the Irish Free State

The text of the Dangerous Drugs Bill, introduced to the Dáil by the Minister for Justice, was circulated last week. The Bill is intended to control the import, export, manufacture, use, and sale of certain drugs in accordance with the provisions of the Hague Convention, and the Geneva Conventions of 1925 and 1931. It is concerned chiefly with opium, cocaine, and Indian hemp and their derivatives, but it is provided that the Executive Council may, by order, extend the scope of the Act to other drugs. Very extensive power is given to the Minister to form regulations under the Act, and the drafting of such regulations will probably be more important than the phrasing of the Bill itself.

The Insulin Inquiry

An application by the Association of British Chemical Manufacturers—on behalf of British Drug Houses, Ltd., Boots Pure Drug Co., Allen and Hanburys, Ltd., and Burroughs Wellcome and Co.—to include foreign insulin in the list of dutiable articles under the Safeguarding of Industries Act was heard before a Board of Trade tribunal from Nov. 17th–19th. Mr. Henn Collins, K.C., was the referee, sitting with Prof. F. G. Donnan, F.R.S., and Prof. Samuel Smiles, F.R.S. On behalf of the British Chemical Manufacturers, Mr. Trevor Watson, K.C., said that the question to be decided was whether or not insulin was regarded as a chemical for inclusion under the Act. Prof. R. Robinson, F.R.S., called as a witness, said he would describe insulin as a fine chemical. His clients, Mr. Watson said, had no intention of raising the price of insulin if the duty were imposed. Mr. R. Moritz, K.C., stating the case for Messrs. C. L. Bencard, Ltd., importers of Danish insulin, contended that insulin was a protein, the composition of which was not fully known, and Prof. E. F. Armstrong, F.R.S., called as a witness, said he would not regard insulin at the present time as a unique chemical; he classed it as a protein. For the Board of Trade, Mr. L. F. Heald said that the Board must be satisfied that an article was a fine chemical before it could be placed on the list. The referee announced that he might take some time to arrive at a decision.

Medical Diary

Information to be included in this column should reach us in proper form on Tuesday, and cannot appear if it reaches us later than the first post on Wednesday morning.

SOCIETIES

ROYAL SOCIETY OF MEDICINE, 1, Wimpole-street, W.

MONDAY, Nov. 27th.—8 P.M., ODONTOLOGY. Miss Freda Parsons: Speech Training of Cleft Palate Cases. (Demonstration.) Mr. E. A. Hardy: Dental Aspects of Cleft Palate Cases. (Film.) Members of the Section of Surgery are invited to attend.

TUESDAY.—5 P.M., MEDICINE. Discussion: Prognosis of Peptic Ulcers. Discussion to be opened by Dr. Charles Bolton, Dr. J. J. Conybeare, Mr. L. N. Pyrah, and Mr. A. M. Cooke.

WEDNESDAY.—5 P.M., Library will be closed. 8.30 P.M., RECEPTION by the President and Mrs. Warren Low. 9.15 P.M., Address by Prof. E. N. da C. Andrade: Ultra-violet Light.

FRIDAY, Dec. 1st.—10.30 A.M., OTOLOGY. (Cases at 9.30 A.M.) Hearing Aids. Discussion to be opened by Mr. C. S. Hallpike, followed by Sir J. Dundas-Grant: Simplified Methods of Determining Percentage of Actual Hearing-power in Tuning-fork Tests. Sir J. Dundas-Grant will give a demonstration on the method of measuring the half-amplitude period of tuning-forks. Cases will be shown. 4.30 P.M., LARYNGOLOGY. (Cases at 3.45 P.M.) Treatment of Carcinoma of the Œsophagus. Discussion to be opened by Prof. G. Grey Turner, Mr. F. J. Cleminson, and Dr. Walter Levitt. Mr. Walter Howarth and Dr. N. S. Finzi will also speak. Cases will be shown. Members of the Sections of Radiology and Surgery are invited. 8.30 P.M., ANÆSTHETICS. Dr. Etherington Wilson: Intrathecal Nerve-root Block. A New Technique.

MEDICAL SOCIETY OF LONDON, 11, Chandos-street, Cavendish-square, W.

MONDAY, Nov. 27th.—8.30 P.M., Discussion on Ward and Dormitory Infections (excluding the Exanthemata, to be introduced by Dr. J. Alison Glover, Dr. J. C. Spence, and Dr. E. Kaye Le Fleming.

WEST LONDON MEDICO-CHIRURGICAL SOCIETY.

FRIDAY, Dec. 1st.—8.30 P.M. (at the Hotel Rembrandt, Thurloe-place, S.W.). Discussion on the Treatment of Heart Failure, opened by Prof. A. Fraenkel (Heidelberg) and Dr. T. Jenner Hoskin. Dinner at 7.30 P.M.

LECTURES, ADDRESSES, DEMONSTRATIONS, &c.

FELLOWSHIP OF MEDICINE AND POST-GRADUATE MEDICAL ASSOCIATION, Wimpole-street, London, W.

MONDAY, Nov. 27th, to SATURDAY, Dec. 2nd.—NATIONAL TEMPERANCE HOSPITAL, Hampstead-road, N.W. Evening M.R.C.P. Course. Tues. and Thurs. at 8 P.M.—LONDON LOCK HOSPITAL, Dean-street, W. Course in Veneral Disease. Afternoons and evenings.—BRITISH RED CROSS CLINIC, Peto-place, N.W. Course in Rheumatism. Tues. and Thurs., at 8 P.M.—INFANTS HOSPITAL, Vincent-square, S.W. Course in Infants' Diseases. Afternoons.—HOSPITAL FOR DISEASES OF THE SKIN, Blackfriars-road, S.E. Course in Dermatology. Afternoons.—PANEL OF TEACHERS. Individual clinics in various branches of medicine and surgery are available daily by arrangement with the Fellowship of Medicine. These courses are open only to Members and Associates.

HOSPITAL FOR SICK CHILDREN, Great Ormond-street, W.C.

TUESDAY, Nov. 28th.—11.30 A.M., Dr. W. W. Payne: The Practical Use of the Sedimentation-rate (Biochemical Demonstration).

WEDNESDAY.—9.30 A.M., Skin Clinic. 2 P.M., Dental Clinic.

THURSDAY.—2 P.M., Tonsils, Adenoids, and Anæsthesia.

SATURDAY, Dec. 2nd.—9.30 A.M., Eye Clinic.

Medical and Surgical Out-patient Clinics: daily from Mond. to Sat., 10 A.M. to 12 noon. Medical Wards: mornings, 10 A.M., Mond., Wed., Thurs., and Sat.; afternoons, 2 P.M., Mond., Tues., Thurs., and Frid. Surgical Wards: Tues., Thurs., Frid. mornings, and Wed. afternoon.

ROYAL NORTHERN HOSPITAL, Holloway-road, N.

THURSDAY, Nov. 30th.—3.15 P.M., Mr. L. E. Barrington-Ward: Pre- and Post-operative Treatment.

HAMPSTEAD GENERAL AND NORTH-WEST LONDON HOSPITAL Post-graduate Lectures.

WEDNESDAY, Nov. 29th.—4 P.M., Mr. A. Gray: Prenatal Care.

NATIONAL HOSPITAL, Queen-square, W.C.

MONDAY, Nov. 27th.—3.30 P.M., Dr. Kinnier Wilson: Disorders of Cerebral Function: Aphasia, Apraxia, &c.

TUESDAY.—3.30 P.M., Dr. Carmichael: The Vegetative Nervous System.

WEDNESDAY.—3.30 P.M., Dr. Collier: Clinical Demonstration.

THURSDAY.—3.30 P.M., Dr. Walshe: The Motor System. Out-patient clinic each day at 2 P.M.

FRIDAY, Dec. 1st.—3.30 P.M., Dr. Walshe: The Motor System.

ST. PAUL'S HOSPITAL, Endell-street, W.C.

WEDNESDAY, Nov. 29th.—4.30 P.M., Mr. Stanford Cade: Radium Treatment of Epithelioma of the Penis.

CENTRAL LONDON THROAT, NOSE, AND EAR HOSPITAL, Gray's Inn-road, W.C.

FRIDAY, Dec. 1st.—4 P.M., Mr. J. D. McLaggan: Tuberculosis of the Larynx.

CHARING CROSS HOSPITAL MEDICAL SCHOOL, Chandos-street, W.C.

SUNDAY, Nov. 26th.—10.30 A.M., Mr. N. C. Lake: The Surgery of the Sympathetic Nervous System. 1.45 A.M., Mr. H. G. E. Williams: (*a*) Dysmenorrhœa; (*b*) Menorrhagia.

KING'S COLLEGE HOSPITAL MEDICAL SCHOOL, Denmark-hill, S.E.

THURSDAY, Nov. 30th.—4.30 P.M., Dr. R. D. Lawrence: Diet and Dietetics. 9 P.M., Dr. J. L. Livingstone: Asthma.

ROYAL INSTITUTE OF PUBLIC HEALTH, 23, Queen-square, W.C.

WEDNESDAY, Nov. 29th.—4 P.M., Dr. C. P. Blacker: Citizenship and Eugenics.

SOUTH-WEST LONDON POST-GRADUATE ASSOCIATION, St. James Hospital, Onseley-road, Balham, S.W.

WEDNESDAY, Nov 29th.—4 P.M., Dr. T. Tennent: Psychiatric Problems in General Practice.

LONDON SCHOOL OF DERMATOLOGY, St. John's Hospital, 49, Leicester-square, W.C.

TUESDAY, Nov. 28th, and following THURSDAY.—5 P.M., Dr. A. C. Roxburgh: Cutaneous Syphilis.

ANCOATS HOSPITAL, MANCHESTER.

THURSDAY, Nov. 30th.—4.15 P.M., Mr. F. H. Diggle: Pharyngeal and Œsophageal Pouches.

MANCHESTER ROYAL INFIRMARY.
TUESDAY, Nov. 28th.—4.15 P.M., Mr. W. R. Douglas: Treatment of Malignant Glands of the Neck. (With Cinema Demonstration.)
FRIDAY, Dec. 1st.—4.15 P.M., Dr. W. Brockbank: Demonstration of Medical Cases.

LEEDS GENERAL INFIRMARY.
TUESDAY, Nov. 28th.—4 P.M., Dr. Ingram: Dermatological Cases.

GLASGOW Post-graduate Lectures.
TUESDAY, Nov. 28th.—3.30 P.M. (in the Faculty Hall, Vincent-street), Dr. Noah Morris: Glycosuria in Childhood.
WEDNESDAY.—4.15 P.M. (at the Ear, Nose, and Throat Hospital), Dr. W. C. Macartney: Ear, Nose, and Throat Cases.

Appointments

BOLTON, N. W., M.B., Ch.B. Manch., has been appointed Hon. Surgeon, Stockport Infirmary.
DAVIDSON, A. H., M.D. Dub., F.R.C.P.I., Master of the Rotunda.
GARLAND, HUGH G., M.D., Leeds, M.R.C.P. Lond., Honorary Demonstrator in Toxicology, Leeds University.
SANKEY, W. O., M.D. Lond., Regional Medical Officer, Ministry of Health.
WILLIAMSON, A. B., M.D., Ch.B. Glasg., Medical Officer of Health, Portsmouth.

Certifying Surgeons under the Factory and Workshop Acts: COOKE, E. R. C., L.R.C.P. Lond., M.R.C.S. (Great Haseley, Oxford); KNIGHT, R. G., L.R.C.P. Lond., M.R.C.S. (Milborne Port, Somerset); MONIE, J., M.B., Ch.B. St. And. (Airdrie, Lanark); and T. H. RHYS, L.R.C.P. Lond., M.R.C.S. (Pwllheli, Caernarvon).

Vacancies

For further information refer to the advertisement columns

Albert Dock Hospital, Connaught-road, E.—Res. M.O. At rate of £110.
All Saints' Hospital for Genito-Urinary Diseases, Austral-street, West-square, S.E.—Res. H.S. At rate of £100–£150.
Blackheath and Charlton Hospital, Shooter's Hill-road, S.E.—Hon. Consulting Surg.
Brighton, New Sussex Hospital for Women and Children, Windlesham-road.—H.P. and H.S. Each £100.
Cambridge, Addenbrooke's Hospital.—Res. Anæsthetist and Emergency Officer. At rate of £130.
Cardiff Royal Infirmary.—H.S. At rate of £50.
Chelmsford Borough.—Specialist Consultant. 3 gns. per consultation.
Chester Royal Infirmary.—H.S. £150.
City of London Hospital for Diseases of the Heart and Lungs, Victoria Park, E.—Res. M.O. £250. Also H.P. At rate of £100.
Dewsbury and District General Infirmary.—Sen. and Second H.S.'s. £200 and £150 respectively.
Doncaster Royal Infirmary.—Cas. H.S. £175.
Dreadnought Hospital, Greenwich, S.E.—H.P. and H.S. At rate of £110.
Elizabeth Garrett Anderson Hospital, Euston-road.—H.P., Obstetric Asst., and Three H.S.'s. Each at rate of £50.
Erith and District Hospital.—Hon. Consulting Jun. Asst. S., Ophth. S., Orthopædic S., and Surg., Ear, Nose and Throat Dept.
Evelina Hospital for Sick Children, Southwark, S.E.—H.S. At rate of £120.
Exeter, Royal Devon and Exeter Hospital.—H.P. and H.S. to Spec. Depts. Each at rate of £150.
French Hospital and Dispensary, 172, Shaftesbury-avenue, W.C. Anæsthetist. £25.
General Lying-in Hospital, York-road, Lambeth, S.E.—Jun. Res. M.O. and Anæsthetist. At rate of £100.
Glasgow, Victoria Infirmary.—Whole-time Asst. Radiologist. £550.
Great Yarmouth General Hospital.—H.S. £140.
Hampstead General and N.W. London Hospital, Haverstock Hill, N.W.—H.S. At rate of £100.
Hertford County Hospital.—H.P. At rate of £150. Also Hon. Radiologist.
Hospital for Epilepsy and Paralysis, Maida Vale, W.—Hon. Psychiatrist. Also Two Med. Regs. Each £100.
Hospital for Sick Children, Great Ormond-street, W.C.—H.P. and H.S. Each at rate of £100.
Hospital for Women, Soho-square, W.—Res. M.O. At rate of £100.
Hull Royal Infirmary.—Third H.S. At rate of £150.
Infants Hospital, Vincent-square, Westminster.—Clin. Asst.
King Edward VII. Sanatorium, Midhurst.—First Asst. M.O. £450.
London County Council.—Temporary District M.O. £200.
London Hospital, E.—Medical First Asst. and Reg. £300.
London Jewish Hospital, Stepney Green, E.—Surg. Reg. 60 gns.
Manchester, Ancoats Hospital.—Res. S.O. £200. Surg. Registrars.
Manchester Babies' Hospital, Burnage-lane, Levenshulme.—Jun. Res. M.O. At rate of £50.
Manchester, Withington Hospital, Didsbury.—Lecturer. 1 gn. per lecture.
Middlesbrough County Borough.—M.O. for Maternity and Child Welfare. £450.
Mildmay Mission Hospital, Austin-street, E.—Asst. Cas. O. At rate of £125.
Newcastle-upon-Tyne, Royal Victoria Infirmary.—Radium Officer. £700.
Northwood, Middx., Mount Vernon Hospital.—Asst. Clin. Pathologist. £500.
Norwich, Norfolk and Norwich Hospital.—H.P. £120.
Oxford University, Dr. Lee's Professorship of Anatomy. £1400.
Plymouth, Central Hospital.—H.S. At rate of £150.
Plymouth, South Devon and East Cornwall Hospital.—H.P. and H.S. Each at rate of £120.
Preston, Biddulph Grange Orthopædic Hospital.—Jun. H.S. At rate of £150.
Princess Beatrice Hospital, Richmond-road, S.W.—Res. M.O. At rate of £110.
Princess Elizabeth of York Hospital for Children, Shadwell, E.—Res. M.O. £200. Also H.S. At rate of £125.
Princess Louise Kensington Hospital for Children, St. Quintin-avenue, W.—H.P. and H.S. Each at rate of £100.
Queen Mary's Hospital for the East End, E.—Dental Anæsthetist. £25. Also Res. M.O. £200. And Cas. O. At rate of £150. Also H.S.'s, and H.P.'s., &c. Each at rate of £120.
Redhill, East Surrey Hospital.—Pathologist.
Royal Chest Hospital, City-road, E.C.—Clinical Assts.
Royal Free Hospital, &c., Gray's Inn-road, W.C.—Bacteriologist and Lecturer in Bacteriology. £500. Also Surg. Reg. £200. Also Gynæcological Reg. and Med. Reg. Each £100. Also H.P.'s, H.S.'s, &c.
Royal Northern Hospital, Holloway, N.—Clin. Asst. for V.D. Dept.
Royal Society of London, Burlington House, W.—Foulerton Research Studentship. £700.
Royal Westminster Ophthalmic Hospital, Broad-street, W.C.—Clinical Research Scholarship. £100.
Ryde, Royal Isle of Wight County Hospital.—Res. H.S. £180.
St. Mark's Hospital for Cancer, &c., City-road, E.C.—Res. Surg. O. At rate of £150.
St. Peter's Hospital for Stone, &c., Henrietta-street, W.C.—Clinical Assts.
Salford Royal Hospital.—Res. Surg. O. £200. Also two H.S.'s. Each at rate of £125.
Sheffield, Jessop Hospital for Women.—H.S. for Maternity Dept. At rate of £120. Also two H.S.'s. Each at rate of £100.
Sheffield, Royal Infirmary.—Asst. Aural and Ophth. H.S. At rate of £80.
Southampton, Royal South Hants and Southampton Hospital.—H.P., Two H.S.'s, Cas. O., and Res. Anæsthetist. Each at rate of £150.
Stoke-on-Trent, Longton Hospital.—H.S. £160.
Surrey County Council.—Two Asst. M.O.'s. Each £600.
Throat, Nose and Ear Hospital, Golden-square, W.—H.S. £100.
Wells Mental Hospital, Somerset.—Asst. M.O. £350.
West London Hospital, Hammersmith-road, W.—H.P. and Two H.S.'s. Each at rate of £100.
Westminster Hospital, Broad Sanctuary, S.W.—Office of Physician for Diseases of the Skin.
Wimbledon Hospital, S.W.—H.S. At rate of £105.
Wolverhampton Royal Hospital.—Surg. Reg. and Res. Asst. Surg. £250.
Worcester Royal Infirmary.—Sen. H.S. £180.

The Chief Inspector of Factories announces a vacant appointment for a Certifying Factory Surgeon at Whittlesey (Cambridge).

In the advertisement for a District Obstetric Assistant for the Royal Free Hospital, Gray's Inn-road, W.C.1, in our last issue, the salary was stated to be £1000; the figure should have been £100.

Births, Marriages, and Deaths

BIRTHS

CORNER.—On Nov. 13th, at Second-avenue, Hove, the wife of Dr. William Corner, of a son.
COWAN.—On Nov. 13th, at Radnor-place, W., the wife of Dr. H. A. Cowan, of a daughter.
DICKSON.—On Nov. 11th, at Edinburgh, the wife of Flight-Lieut. Alexander Dickson, F.R.C.S. Edin., R.A.F. Medical Service, of a daughter.
HALLEY.—On Nov. 18th, at New Mile House, Ascot, the wife of Dr. G. Stiven Halley, of a daughter.
LAW.—On Nov. 14th, at Devonshire-place, the wife of Frank W. Law, F.R.C.S., of a son.
RUTHERFORD.—On Nov. 19th, at The Meads, Cowley, Middlesex, the wife of R. Rutherford, F.R.C.S., of a son.

DEATHS

BOULGER.—On Nov. 14th, at Ewell, Elm-road, Worthing, Lieut.-Colonel Isaac Boulger, R.A.M.C., retd.
BOLTON.—On Nov. 16th, at a nursing-home, George Augustus Bolton, M.B., B.Ch., aged 75.
LEWIS.—On Nov. 13th, at a nursing-home in London, Frank Charles Lewis, M.D., M.R.C.S., L.R.C.P., B.S., D.P.H., aged 58.
O'HALLORAN.—On Nov. 19th, at Folkestone, Colonel Michael O'Halloran, late R.A.M.C.
PARKE.—On Nov. 14th, at Blake House, Tideswell, Buxton, Thomas Henry Parke, M.R.C.S., L.R.C.P., L.S.A., J.P., aged 76.
PURDIE.—On Nov. 18th, Dr. Robert Purdie, M.B., C.M., of Haverstock-hill, N.W., in his 81st year.

N.B.—A fee of 7s. 6d. is charged for the insertion of Notices of Births, Marriages, and Deaths.

NOTES, COMMENTS, AND ABSTRACTS

THE DISRUPTION OF FAMILY LIFE IN SOVIET RUSSIA

THERE are many strange things in Russia, and one of the strangest is the complete change which seems to have overtaken not only the position of women but the whole outlook of the people towards marriage, children, and home life. To uproot the age-old institution of the family is, no doubt, quite as difficult as to uproot the idea of private property and personal gain; and no one can foretell what the ultimate results of either uprooting may be.

A book recently published [1] purports to give the first comprehensive account of the new sexual ethic of the U.S.S.R. and, though it is confused and curiously blurred, it does certainly reveal a number of remarkable things which it would be interesting to understand more clearly. It is a maxim of the Russian revolution, apparently, that women are no longer to be "the better half" of men, but are to be whole human beings on their own account. They are encouraged, and indeed obliged, to be fully self-supporting, and one-third of the whole labour force in Russia to-day is women, who are employed in every kind of work quite indiscriminately and paid on exactly the same basis as men. Thirty-six million women, however, have not yet been drawn into the new way of life and are still housewives; but as fast as may be they are being transformed, and communes and large coöperative dwellings are taking the places of the small individual homes.

Combined with this process there goes a new and very serious insistence upon the proper care of small children. Instead of leaving them to their parents, every kind of State agency exists for feeding, for educating, and for training the future citizens. The mother can, if she chooses, hand the child over entirely to the State; but it seems that more often she does not do this, but avails herself of the clinics, the feeding centres, and the communal nurseries or kindergartens which simplify her task. There is in this book a most curious photograph of a mother's "Milk Centre," which shows rows of young women giving the breast not to their babies but to bottles; and it is one of the disappointments of the text that no explanation of this picture is provided. Much explanation is, however, given of the welfare and medical care which is available for expectant mothers and for infants, and it is quite clear that the Soviet Government is anxious that the break-up of individual families shall result in healthier conditions and more skilled care for children than the old system has in fact anywhere provided.

The problem of the nurture of the children, however, is only a part of the problems associated with the disruption of family life. There remains the question of the sex relations of adults. On this point the book is obscure. For some years after the revolution, the author explains, romantic love was entirely banned. Young people entered upon sexual relations in as casual a spirit as they drank a glass of water, and it was considered "bourgeois" to do anything else. Now a change is taking place, and although romantic love is as much despised as ever, a new form of serious comradeship is taking its place. Monogamy, the author thinks, is holding its own, or is about to hold its own, all the more securely for the complete freedom of divorce and the complete independence of women which prevail. The available statistics do not lend much support to this view as yet. Registered marriages, "factual" marriages, and casual unions seem to come and go with great rapidity, and the appalling housing shortage adds to the confusion. If a man or a woman succeeds in getting a room to himself or herself it seems only decent to ask someone to share it; but if the resulting marriage is dissolved in a month or a year it often happens that no other room can be found, and the couple have to go on living together.

Perhaps the most interesting section of this book, and certainly the most explicit, is that dealing with childbirth. As everyone knows abortion is not illegal in Russia, and birth control is officially encouraged and taught most carefully in the welfare centres. In spite of this, or, as the author asserts, because of it, the birth-rate in Russia is exceptionally high; the young women are eager to have children. It is considered the right thing not to interfere with the birth of the first child, and except in special circumstances operations for abortion are not performed in first pregnancies. Leave of absence from work is given for abortion as for childbirth, and the operation is described as simple and almost uniformly successful.

All this makes queer reading from the standpoint of such a civilisation as ours. From this standpoint there is much that is quite incomprehensible and much that is actually repulsive, but that this gigantic experiment is worth watching carefully will hardly be denied by anyone interested in sociological developments, however strongly he may disapprove of the direction it is taking.

[1] Women in Soviet Russia. By Fannina Halle. London: George Routledge and Sons, Ltd. 1933. Pp. 409. 18s.

HEART BURIAL

Mr. C. A. Bradford, a learned antiquary, has devoted much research to heart burial, and has produced as a result of his labours a work on this curious subject, with special reference to the London area.[1] The cases recorded are doubly indexed according to name and place of interment. Mr. Bradford has come to the conclusion that heart burial was but an offshoot of the practice of evisceration at death, which has been in vogue from the later Stone Age, and was practised by the Egyptians with a highly developed ceremonial, special prominence being given to the heart. The early Christians at first regarded the mutilation of the body with disfavour, but later, when their churches were built over the tombs of martyrs and much importance was attached to relics, churches became the place of interment for persons of consequence who wished it, and for those whose bodies or hearts the clergy considered desirable possessions. For these reasons, and also no doubt because of the long interval elapsing in earlier times between the death of important persons and their interment, evisceration and embalmment were desirable on sanitary grounds.

The fees received by embalmers seem to have risen progressively. Thus in 1625 King James's chirurgeon, William Walker, received a gift of £50 for his attendance, pains, and assistance in embalming his royal master's body. The surgeon who embalmed the heart of the gallant Marquis of Montrose, executed at Edinburgh in 1650, received £25, which included the cost of spices. At the death of Charles II. the royal apothecaries received £212 8s., but the two surgeons only got £100 between them. For embalming the body of Queen Mary II. who died of small-pox Dr. Harel received £200. For performing the "customary funeral rites" on the body of George II. no less a sum than £432 13s. was paid to the royal surgeons and apothecaries.

Possibly evisceration was favoured by some as a precaution against premature burial. It is said, for instance, that Henry, Earl of Cumberland, who died in 1569, was so much affected at the death of his wife that he swooned away and lay as dead. He did not revive till his attendants, who supposed that life had actually departed, were making arrangements for embalming the body. On the other hand, a great lady who died in 1635 gave these directions in her will. "My body to be shrouded and chested

[1] Heart Burial. By Charles Angell Bradford, F.S.A. London: George Allen and Unwin. 1933. Pp. 256. 8s. 6d.

without ripping, imbalming or spicery and buried in Our Lady's church at Salisbury near my late husband." Others also left express directions in their wills against the practice. Perhaps the most famous instance of heart burial is that of Robert the Bruce, King of Scotland, who desired his heart to be taken to the Holy Land by Douglas, and then brought back to Melrose for interment. Apparently it got no further than Spain. Mr. Bradford thinks that it may have been brought back to Melrose, where two leaden caskets were discovered by the Office of Works in 1921; but there was nothing to indicate whose hearts they had contained.

GIVING THE DONOR HIS DUE

MEMBERS of the British Red Cross Society's blood transfusion service deserve both thanks and considerate treatment, not because it is an act of heroism to part with a pint or so of blood, but because they have undertaken a tiresome and altruistic job for the community. They have consented to suffer interruption in the middle of work or play, to make a journey, possibly inconvenient, to hospital, and to submit to an operation which, if it cannot be called painful, is certainly disagreeable: and all for the sake of someone they have never seen before and may never see again. Not unnaturally they want to know how the recipient gets on, and the merest courtesy should ensure that they receive a report through the headquarters of their service. Yet in the *Quarterly Circular*, issued to the service for the first time in October of this year, there is evidence that such reports are often delayed and sometimes extracted only by a threat to withhold donors in future. This reflects unfavourably on the manners of our profession, and can scarcely help to maintain the supply of donors.

It must not be supposed, however, that a complaining note has been sounded in the circular itself; on the contrary, it is written in a most coöperative spirit. Its purpose is to bring the scattered members of the service into closer touch with each other. Cohesion has not been too good in the past, for even a common generosity in blood giving has not proved a strong enough bond between donors to make social gatherings, such as dances, a complete success. The circular will supply notes of interest, statistical returns, reports of cases, and answers to technical questions raised by members. It is noteworthy that no appeal is ever made to a donor to reconsider a decision to resign; both the decision and the reasons for it are regarded as his personal concern. A good many members drop out in the course of time, but numbers go on performing this useful service for years. The record of the London service is held by an assistant scout-master at Hackney, who has given blood on 51 occasions, but we still fall far behind the world record, held by a Frenchman, who has supplied 109 quarts of blood to a series of 459 patients.

LINGFORD'S LIVER SALT

WE reported upon this preparation put on the market by Messrs. Joseph Lingford and Son, of Bishop Auckland, in THE LANCET of Feb. 18th, 1933, describing it as a well-balanced medicinal salt, of which the composition was:—

Magnesium sulphate	.. 21·1 per cent.
Sugar	.. 28·0 ,, ,,
Sodium bicarbonate	.. 26·0 ,, ,,
Tartaric acid ..	.. 23·5 ,, ,,

We have heard recently from the manufacturers that they have added calcium iodide to the preparation, at the same time making certain improvements in the methods of packing. The addition of the calcium iodide is very small, and could not therefore make any difference in the keeping properties of the preparation. The known efficacy of calcium in certain conditions of deficiency makes the addition a logical one, but in dealing with so minute a quantity no analyst will state with any certainty that changes in nutrition would follow. This is a point which can only be settled in one of two ways, or in both ways. A series of biological experiments of the usual description might be undertaken, when investigation of altered conditions between the animals experimented upon and the controls might be detected. Secondly, the actual users of the preparation might be able to report upon benefits derived, having their opinions supported by medical men. The preparation is both a pleasant and a useful one, and the addition made to it cannot detract from its present qualities, and may enhance the therapeutic value.

INTER-LIBRARY LOANS

LAST year the library of the London School of Hygiene and Tropical Medicine lent 514 books to 22 other libraries. From the National Central Library came 279 requests, to 121 of which it proved possible to respond. This gained the Keppel-street library a place among those "which have been specially generous in lending books" to the central library. Mr. C. C. Barnard, the librarian, remarks in his report: "If any purely mercenary justification for this 'generosity' be needed we have it in the fact that our borrowings from other libraries are greater even than our loans, amounting to 697 books from 33 libraries. If we exclude from our reckoning the Science Library and Lewis's circulating library which do not borrow, over 82 per cent. of our borrowings are from libraries to which we have also lent, so that the reciprocal nature of the service is obvious. This department of the library's work occupies a considerable part of the time of two members of the staff, although its direct monetary cost is less than £10 a year. I am, however, quite satisfied that it is well worth while, and am strengthened in this conviction by the statements of several members of the teaching and research staff of the school, who declare it to be by far the most valuable benefit they derive from the library."

EXHAUST GAS DETOXIFIED

WHEN petrol is burnt in oxygen, carbon dioxide and water are the final products and heat is evolved. But in applying this well-known chemical action to the propulsion of a motor-car, it has so far proved impossible to invent a carburettor which can be adjusted so that the breakdown of the fuel is completed under all atmospheric conditions and at all speeds. If, for example, insufficient oxygen is present all the carbon will not be oxidised as far as carbon dioxide, and some will be expelled from the exhaust pipe as the less agreeable monoxide. The proportion of carbon monoxide present is highest when the engine is running and the car is travelling slowly or is stationary; these conditions are fulfilled when the car is moving slowly in crowded streets, is crawling in a traffic jam, or is running in the garage. It is unfortunate that these are also the times when many people are likely to come into contact, either wittingly or unwittingly, with the gases which it emits.

In the *Manchester Guardian* of Nov. 15th a correspondent describes the work of Mr. John Harger, of the department of metallurgy in the University of Liverpool, who has discovered a catalyst by means of which the oxidation of carbon monoxide takes place so fast that it is completed before the gas leaves the exhaust pipe. No expensive alterations or modification of machinery are involved. All that is needed is the fitting of a new exhaust box containing the catalytic agent. The name of this substance is bauxite; it is a hydrated oxide of aluminium which takes its name from a village called Les Beaux or Les Baux, near Arles, where it was first found, and which in this country is now mined in Co. Antrim. It is used in the manufacture of aluminium.